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# STREET RE-ALIGNMENT AND RE-CONSTRUCTION OF CENTRAL LONDON.

H. H. BRIDGMAN, F.R.I.B.A.,

ARCHITECT AND SURVEYOR.

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# CONTENTS.


| | PAGE |
|---|---|
| Preface | 5 |
| Introduction | 7 |
| Lt.-Colonel Haywood's Opinion in 1866 (Engineer to the Commissioners of Sewers for the City of London) | 10 |
| Population of the Metropolis | 12 |
| Distribution of Population | 14 |
| City Day Population | 16 |
| Traffic.—Vehicular | 19 |
| „ Class of Vehicles | 22 |
| „ Pedestrian | „ |
| „ Railway Station | 24 |
| „ Width of Streets | 25 |
| Traffic over Bridges—London Bridge | 27 |
| Blackfriars Bridge | 29 |
| Southwark Bridge | 30 |
| „ Principal Lines of | 33 |
| „ North and South | „ |
| „ East and West | 34 |
| Centres of Traffic | 35 |
| Commercial Centre | 37 |
| Legal Centre | „ |
| Pleasure Centre | „ |
| Markets Centre | „ |
| Modern Improvements (coloured Green on Key plan) | 38 |
| Future Requirements ( „ Pink „ „ ) | 41 |
| Suggested New Streets—East of Farringdon Road | 42 |
| „ „ West of Farringdon Road | 55 |
| „ „ South Side of Thames | 60 |
| Suggested Southern Embankment | 62 |
| The proposed New Bridge at the Tower | 63 |
| The kind of Bridge required | 69 |

PAGE

Cost of City Bridges . . . . . 71
Cost of Suggested Improvements . . . . . „
Subway Crossings. . . . . 81
Telegraph Subways . . . . . 82
Thames Navigation . . . . . „
Gates and Bars . . . . . 83
Warehousing . . . . . „
Sanitation . . . . . 84
Subsoil . . . . . „
New Sewers and Drainage . . . . . 85
Sewer Ventilation . . . . . „
Levels and Gradients . . . . . 86
Conclusion . . . . . „

## ILLUSTRATIONS.

A suggested design for a combination High and Low Level Bridge at the Tower . . . . . 70
Plan of Proposed Subways at the Mansion House and Bank Intersection . . . . . 82
Key Plan of Suggested New Streets and Improvements . . end

*WESTGARTH PRIZE ESSAY.*

AWARDED BY THE SOCIETY OF ARTS.

SUBJECT:

# STREET RE-ALIGNMENT AND THE RE-CONSTRUCTION OF CENTRAL LONDON.

## PREFACE.

THE Author has much pleasure in submitting this Essay for the consideration of the Council of the Society of Arts, at whose disposal Mr. WESTGARTH has placed his munificent offer.

The Author regrets that he has not had an opportunity of devoting a longer time than a fortnight to the preparation of the Essay, thereby further enhancing the pleasure which its preparation has already given him. He trusts that some lasting benefit will accrue to the Metropolis as a result of a Competition on so interesting a subject.

The Author has confined himself to the one question of "Street Re-Alignment and Re-Construction of Central

London" and its accessaries; it is inferred from the instructions that this would be permissible. The lateness of the period at which the Competition became known to him precluded the possibility of any further attempt.

The Author desires to acknowledge the great assistance he has derived from the "City Day-Census, 1881," also from Lt.-Colonel Haywood's "Report on the Traffic and Improvements in the Public Ways of the City of London, 1866," also from the "Metropolitan Board of Works Report for 1883," from which many of the Tables have been taken, the same are consequently all authoritative.

*WESTGARTH PRIZE ESSAY.*

AWARDED BY THE SOCIETY OF ARTS.

SUBJECT:

# STREET RE-ALIGNMENT AND THE RE-CONSTRUCTION OF CENTRAL LONDON.

## INTRODUCTION.

THE Author's qualifications for writing upon so important a question as the "Street Re-alignment and Re-construction of Central London" are based upon the following facts :—

He is an architect and civil engineer by profession, and, before commencing practice, had for some time acted as a Surveyor to one of the largest metropolitan Vestries, containing a population of close upon a quarter of a million of inhabitants; so that in the discharge of the various duties devolving upon him, the questions of the formation and improvement of streets, and the supervision of thoroughfares generally, took a prominent place. A considerable knowledge of the "Metropolis Local Management Acts," which

regulate all matters of street alignment and re-construction in the Metropolis, followed in consequence of that appointment.

He is also qualified by examination to act as District Surveyor within the Metropolitan area, is a Fellow of the Royal Institute of British Architects, and a member of the Society of Arts, and has practised his profession as an architect and surveyor for thirteen years. He is also co-author of the Corporation of Liverpool prize essay entitled a "Central Wholesale Fish Market for London," obtained in open competition, on the occasion of the International Fisheries Exhibition, London in 1883.

The time at disposal for the preparation of this Essay has been very brief (the competition having only come to the author's notice late in November, although it had been open during the whole year), still his practical and intimate acquaintance with the subject being not inconsiderable, he desired to embrace the opportunity of giving his views upon the same.

He would also add that he is acquainted with most of the various recent street improvements in London and also with those now in contemplation, both by the Corporation of the City of London and the Metropolitan Board of Works. As far as they apply to this Essay, they are included in the maps herewith.

Having for some years witnessed the growing necessity of relief to many of the main lines of traffic in Central London, he has frequently and seriously considered how the present congested condition of the traffic could be improved.

The subject is one requiring to be treated in a broad and comprehensive manner. London labours under great disadvantages, the bands that now prevent its full development require relaxing in order that moving space may be

provided for the unprecedented aggregation of so large a number of inhabitants, and facilities given for transacting the extraordinary magnitude of the business inseparable from the metropolis of so vast and increasing an empire.

The Author's ideas on the subject are illustrated in the annexed maps; a key plan gives the general scope of them. Detail maps of several parts of Central London, most in need of improved street accommodation, accompany it. He would also add that the suggested lines of streets shown are not simply drawn haphazard, but, after a careful study of the various routes, and it may be stated, in most instances, from a personal knowledge of the district which each map covers. The lines are set out in a practical manner, having regard to the numerous prominent buildings *en route* and the many important circumstances in connection therewith.

The maps are six in number, and three illustrations consisting of the following:—

* 1. Key plan. The central sheets of Bacon's Map of London. This district extends from the "Angel" Hotel at Islington to the "Elephant and Castle," Newington, and from Piccadilly Circus to Whitechapel High Street, a distance of about three miles each way and comprising nine square miles.

2. Sheet XXXV. Ordnance Survey of London, scale 25-344 inches to a mile, and part of Sheet XXXIV. attached, extending from Poultry to Regent Street.

3. Sheet XXXVI. Do., Do., extending from Poultry to Whitechapel.

4. Sheet XLV. Do., Do., extending from Borough High Street, Eastwards, South side of Thames.

5. Sheet XLIV. Do., Do., extending from Borough High Street to Westminster.

* This only is published.

6. Sheet XXVI. Do., Do., extending from King's Cross to City Road Basin.

*7. Plan of Proposed Subways at the Mansion House and Bank, Intersection.

*8. A suggested design for a Combination High and Low Level Bridge at the Tower.

## LT.-COLONEL HAYWOOD'S OPINION IN 1866.

About nineteen years ago, (viz., in March, 1866), Colonel Haywood, C.E., the Engineer to the Commissioners of Sewers for the City of London, submitted to that body a report entitled: "Traffic and Improvements in the Public Ways of the City of London." The conclusions then arrived at and set out in his report are interesting and worthy of careful perusal. The following are extracted therefrom.

"The metropolitan population is now about three millions, and in forty years will, in all probability, be six millions."

"The traffic of the City has for several years been increasing in a greater ratio than the increase of the metropolitan population."

"In 1848 a traffic equal to *one-seventh* of the whole metropolitan population entered the City during the time of the business hours of the day."

"In 1860 a traffic equal to nearly *one-fifth* of the whole metropolitan population entered the City during twelve of the business hours of the day and a traffic of *one-fourth* of the whole metropolitan population during the 24 hours, viz., 706,621."

"The traffic now entering the City daily is about *three-quarters of a million*, and in forty years hence will probably be a *million and a half*."

"This daily business population needs now, and hereafter

* These only are published.

will need still more, improved means of transit, and these should be provided."

"*Within the City itself there is hardly a leading thoroughfare which is equal to the traffic that passes through it*, and many subsidiary streets are inconveniently crowded with their own traffic."

"The only remedies for this state of the City thoroughfare are the formation of new thoroughfares and the widening of those now existing."

"The first great difficulty is the incapacity of London Bridge with its approaches on both sides, and this can only be remedied by the construction of a new Bridge with good approaches to the east of London Bridge."

"The second great difficulty is the *incapacity of the main thoroughfares running east and west near to the Bank*, and this can only be remedied by the formation of a new thoroughfare running through the City north of, and contiguous to, the Bank."

"General improvement is needed in many of the City thoroughfares, plans of such Streets should be prepared with lines of improvement shown, and to these lines all premises should be set back when opportunities present themselves."

"Looking to the future as well as to the present necessities, and having regard to the fact that the cost of present improvements will probably be in a degree cast upon a future generation, they should be planned and carried out upon the broadest and most comprehensive scale, and no obstacle should be allowed to interfere with this principle, such a course is true economy."

"More stringent police regulations with regard to the traffic are needful."

"The provision of the necessary funds is one of the greatest difficulties and to some will appear an invincible

one; but it should be held in mind that where the need of public improvement arises from the increase in the numbers, business and wealth of the population it may be generally inferred that the population is able to pay for them."

## POPULATION OF THE METROPOLIS.

The foregoing constitutes a summary of the conclusions of an able report by the Engineer and Surveyor to the Commissioners of Sewers, whose forty years' experience as a valued public officer of the Commissioners would fully entitle him to speak with authority on this important subject.

It is not difficult to prove the soundness of the views thus enunciated and to show how nearly in many instances the anticipations and observations so long foreshadowed have been realized.

It will be the Author's desire, in the first place, to show the necessity of vastly improved means of communication in and about Central London, and, in the second place, to point out how that need can be met.

Colonel Haywood's Report refers more particularly, of course, to the City, but in degree it applies to the whole of Central London, which might reasonably be reckoned to extend from Tottenham Court Road and Regent Street in the west, to the Tower and Whitechapel High Street in the east, and from the "Angel" at Islington in the north, to the "Elephant and Castle" in the south—for whilst the congestion of the traffic is greater, by far, in the very heart of the City than elsewhere, still the inconvenience is felt only in a less degree in proportion to the distance from the centre where the traffic ebbs and flows to and from all parts of the Metropolis.

The following table shows the rate of increase in the population of the Metropolis and the City during the past

nine years. The population of the City proper, however, has gradually decreased during that period :—

| | | | | |
|---|---|---|---|---|
| Pop. of the Metropolis in | 1801 | 958,863 | of the City | 128,833 |
| " | 1811 | 1,138,815 | " | 121,124 |
| " | 1821 | 1,378,947 | " | 125,065 |
| " | 1831 | 1,654,994 | " | 123,608 |
| " | 1841 | 1,948,417 | " | 124,717 |
| " | 1851 | 2,362,236 | " | 129,128 |
| " | 1861 | 2,804,079 | " | 113,387 |
| " | 1871 | 3,020,871 | " | 74,897 |
| " | 1881 | 3,452,350 | " | 50,526 |

If *three quarters of a million* of people entered the City early in 1861 the number would be more than one-half of the entire male population, as will be seen from the following figures.

In 1861 the population of the Metropolis was composed of—

1,307,781 males.
1,496,298 females.

2,804,079 Total.

of the males 846,754 were above fifteen years of age.
461,027 were under " "

1,307,781 Total number of males of all ages.

From 1801 to 1861 the population of the Metropolis had about trebled itself. It has nearly doubled itself during the past forty years, that being about the present ratio of increase. In 1841 the population was 1,948,417. In 1881 it was about 3,452,350. By 1901 it may be fairly reckoned that the population of London will be from 5½ to 6 million souls, probably the larger number, and possibly that number might be exceeded, as the influx from the agricultural

districts to the manufacturing centres, and again from all the great centres to the Metropolis increases yearly, and this increase will, in all probability, be still larger in the future than in the past. The education of the people and the enfranchisement contemplated of such large numbers will certainly tend in this direction.

## Distribution of Population.

It is in anticipation of the growing population in the future, therefore, that provision has to be made, and it is not difficult, when all the surroundings are considered, to foresee where improvements in our streets will be most needed and how they can be best made. A broad and comprehensive view, however, must be taken of the whole subject, for whilst the Metropolis is developing by such rapid strides, proportionately increasing numbers of persons, engaged in actual business and moving to and fro, will spend the larger portion of every day within the comparatively limited area of the centre of the Metropolis, but principally within the City itself. Regard must be paid, moreover, to the populations of the various districts, and the directions which the streams of the larger part of the moving population may be expected to take, before a commencement is made to effect a remedy for the present deficiencies. On reference to the following table it will be seen from which district the greatest influxes come and the directions the great streams of traffic at present take.

This table shows the area, as well as the population, also the present number of persons to a square mile in the various Metropolitan Districts and their capacity for further increase.

| Name of Parish or District. | Superficial Area in Acres. | 1851. | | 1881. | |
|---|---|---|---|---|---|
| | | Total Population. | No. of Persons to Square Mile. | Total Population. | No. of Persons to Square Mile. |
| Limehouse | 153 | 44,406 | 185,751 | 58,500 | 244,720 |
| Strand | 174 | 44,460 | 163,531 | 32,563 | 119,772 |
| St. Luke | 220 | 54,055 | 157,251 | 46,847 | 136,282 |
| Holborn | 196 | 46,621 | 152,232 | 36,122 | 117,949 |
| St. James, Westminster | 164 | 36,406 | 142,072 | 29,865 | 116,546 |
| St. Giles | 245 | 54,214 | 141,620 | 45,257 | 118,221 |
| Fulham | 136 | 28,790 | 135,482 | 114,811 | 540,207 |
| St. George-in-the-East | 243 | 48,376 | 127,410 | 47,011 | 123,815 |
| Whitechapel | 406 | 79,759 | 125,728 | 71,301 | 114,000 |
| St. George, Southwark | 282 | 51,824 | 117,615 | 68,652 | 134,500 |
| Clerkenwell | 380 | 64,778 | 109,100 | 69,019 | 135,200 |
| Shoreditch | 646 | 109,257 | 108,242 | 126,565 | 127,700 |
| St. Saviour, Southwark | 250 | 35,731 | 91,471 | 28,628 | 71,600 |
| London City | 434 | 55,932 | 82,480 | 50,526 | 75,700 |
| Bethnal Green | 760 | 90,193 | 75,952 | 127,006 | 101,000 |
| St. Olave, Southwark | 169 | 19,375 | 73,373 | 11,947 | 44,800 |
| Marylebone | 1,509 | 157,696 | 66,882 | 155,004 | 66,500 |
| Newington | 624 | 64,816 | 66,478 | 107,831 | 110,720 |
| Mile End Old Town and Stepney | 1,257 | 110,775 | 56,401 | 105,573 | 53,750 |
| St. Martin-in-the-Fields | 305 | 24,640 | 51,704 | 17,447 | 34,800 |
| Westminster (Board of Trade) | 917 | 65,609 | 45,790 | 59,837 | 41,760 |
| Bermondsey | 688 | 48,128 | 44,770 | 86,602 | 80,640 |
| Chelsea | 865 | 56,538 | 41,832 | 88,100 | 65,200 |
| St. George, Hanover Square | 1,161 | 73,230 | 40,368 | 89,517 | 49,360 |
| Pancras | 2,716 | 166,956 | 39,342 | 236,209 | 55,600 |
| Lambeth | 4,015 | 139,325 | 22,209 | 253,569 | 40,200 |
| Islington | 3,127 | 95,329 | 19,511 | 282,628 | 56,600 |
| Rotherhithe | 886 | 17,805 | 12,861 | 36,010 | 26,011 |
| Greenwich | 5,367 | 99,365 | 11,849 | 131,264 | 15,680 |
| Kensington | 7,374 | 120,004 | 10,415 | 162,924 | 14,120 |
| Poplar | 2,918 | 47,162 | 10,344 | 156,525 | 34,320 |
| Hackney | 3,929 | 58,429 | 9,518 | 186,400 | 36,000 |
| Camberwell | 4,342 | 54,667 | 8,058 | 186,555 | 27,000 |
| Hampstead | 2,252 | 11,986 | 3,406 | 45,436 | 12,900 |
| Wandsworth | 11,695 | 50,764 | 2,778 | 210,397 | 11,480 |
| Lewisham | 17,224 | 34,835 | 1,294 | 135,366 | 5,930 |
| Woolwich | 1,596 | 32,367 | 12,977 | 36,600 | 14,670 |
| Paddington | 1,280 | 46,345 | 23,173 | 106,098 | 53,180 |

The new outlying Districts, as they become built over, under improved sanitary and building regulations, will be of less density than the old. Sir Joseph Bazalgette, C.B., and Colonel Haywood, when investigating this question, in so far as it affected the interception of the sewage from the Thames, assumed that the future density of the population

of the uncovered area of the suburbs of the Metropolis would be about 30,000 persons per square mile.

The rate of increase in many Districts is remarkable, the rate of density, however, has not increased in the same proportion, some Districts having considerably more area than others. It will be seen that the density ranges from 5,930 per square mile in Lewisham, to 540,207 per square mile in Fulham.

The following list of Metropolitan Boroughs in their order of population will indicate the District from which the largest numbers of the masses emanate—

| Parliamentary Boroughs of the Metropolis. | Population in 1881. | Order as regards Population. |
|---|---|---|
| Borough of Finsbury, N. . . | 524,480 | 1 |
| „ Lambeth, S. . . | 498,967 | 2 |
| „ Marylebone, N. . | 498,311 | 3 |
| „ Tower Hamlets, E. . | 438,910 | 4 |
| „ Hackney, N. . . | 417,191 | 5 |
| „ Chelsea, W. . . | 366,516 | 6 |
| „ Westminster, S.W. . | 228,932 | 7 |
| „ Southwark, S. . . | 221,866 | 8 |
| „ Greenwich, E. . . | 206,651 | 9 |

From these figures it will be seen that the greatest traffic Citywards is from the purely Northern and Southern Districts. Close upon *a million and a half* inhabit the Northern Districts, and *above a million* the Southern, whilst considerably above *one million* inhabit the purely Eastern and Western Districts.

## City Day Population.

It would be very interesting, were it possible, to watch the multitude pouring into the City during the day. The early morning begins with an influx of people from all

directions towards the centre of London. First the market frequenters, buyers, sellers, and distributers, and the working classes arriving by foot or by train, so that from 5 to 7, 35,895 persons enter within the borders of the City. From 7 to 10 an army of 229,611 strong is passing into the City, consisting of commercial men, bankers', and law employés, clerks, messengers, porters, and office lads. During the third period, from 10 to 12 o'clock, 107,325 persons more, chiefly principals and managers, have arrived all to take up their fixed daily occupations within the City, and to return again to their residence in the various suburbs at night. The figures tabulated are as follows:—

| | |
|---|---|
| Number of persons entering the City daily from 5 a.m. to 7 a.m. . . . . | 35,895 |
| Number of persons entering the City daily from 7 a.m. to 10 a.m. . . . . | 229,611 |
| Number of persons entering the City daily from 10 a.m. to 12 noon . . . . . | 107,328 |
| Number of persons entering and engaged in and about the City daily . . . . . | 372,835 |
| Number of persons as Clients, Customers, &c., entering the City daily for short periods | 366,805 |
| Total | 739,640 |
| Other persons, on the average, who enter and leave, or pass through the City daily . | 57,923 |
| Total travelling to and leaving the City daily, exclusive of actual residents . . | 797,563 |
| Number of actual residents within the City . | 50,526 |
| Total | 848,089 |

Included in the first total are those only who are fre-

quenters to the City as business men, customers, clients, and others having business within the City, but not including those who are actual residents. There is in all considerably more than *three quarters of a million* in and about the City during the sixteen active hours of the day, for, beyond the first total, in the remaining eight hours a further 57,923 visitors and others enter and leave the City during the day, making together 797,563. This number it is perceived, however, is not the grand total. Over and above the figures already given there were in 1881 within the City as *actual residents* 50,526 (compared with 74,897 in 1871 and 113,387 in 1861), *thus giving a grand total for* 1881 *of occupiers, traders and residents who visit and are in and about the City daily of** 848,089.

Commencing with a flow of 15,000 per hour, as the day wears on that number increases in volume to 20,000, 35,000 up to 93,000, until it culminates at 111,111 per hour. This tide of humanity then recedes until between 8 and 9 o'clock p.m., when the great bulk of the City's population has retired and the hour of quiet and rest has arrived.

The mercantile day population has gradually increased from 170,133 persons in 1866 to 261,061 persons in 1881, an increase of 90,947, or at the rate of 53·4 per cent. This shows an increase over the number that entered the City daily in 1866 of 59,896, and 82,261 daily over that of 1860. But for the heavy tax on inhabited houses in the City of 9d. in the £, no doubt a very much larger population would be residents. As the law stands at present the whole of a building is liable for house duty if only a single resident occupies the premises beyond a housekeeper or caretaker.

| | | | | |
|---|---|---|---|---|
| * In 1848 the numbers were from 8 a.m. to 5 p.m. | | | | . . . 315,099 |
| In 1860 the numbers were during 24 hours | | | | . . . . 706,621 |
| In 1866 | " | " | " | . . . . 728,986 |
| In 1881 | " | " | " | . . . . 848,089 |

To reside in the City, therefore, would be an enormous tax upon highly-rated City property without a corresponding benefit. The number of inhabited houses is consequently only returned at 6,493 in the Imperial Census, but the 'City Day Census' gives the number as 24,898. This occurs from the fact that in the former the resident caretakers and a comparatively small number of other residents only are reckoned. As an instance to show how fallacious this mode of reckoning is, a certain block of offices, according to the Imperial Night Census, contained 4 persons only, but according to the 'City Day Census' there were actually engaged within the same building 250 traders, 275 clerks and other employés, in all 527 persons, the building, no doubt, being divided into several distinct and separate premises, according to the requirements of the Building Act, but this is entirely ignored in the Imperial Census.

## TRAFFIC.

It is now proposed to give some statistics of the vehicular and pedestrian traffic in various streets within the City, and to show the rate of increase of the same.

### VEHICULAR TRAFFIC.

Within the City there is hardly a leading thoroughfare which is equal to the traffic passing through it. The great impediment in the streets is the enormous vehicular traffic, and special consideration must consequently be given to that most important branch of the subject. That fact will be better exemplified by demonstrating the large increase of traffic which has taken place in the thoroughfares of the City—despite the relief which has been frequently given by the construction of numerous new lines of streets and railways—Subjoined, therefore, is a Table showing the

traffic at several important points within the City at periods fifteen years and sixteen years apart respectively :—

Comparative TABLE showing the increase in the number of vehicles passing both ways at certain points in various streets within the City of London, between the hours of 8 a.m. and 8 p.m., during the years 1850, 1865, and 1881.

| Situation. | Width of Carriage-way at point of observation. | | Total in 12 hours. | | Increase since 1850 per cent. | Total in 16 hours. |
|---|---|---|---|---|---|---|
| | | | In 1850. | In 1865. | | In 1881. |
| | ft. | in. | | | | |
| Aldgate High Street . | 57 | 6 | 4,754 | 8,376 | 76·18 | 11,240 |
| Aldersgate Street by Fann Street . . . . . | 30 | 8 | 2,590 | 3,936 | 51·96 | 4,618 |
| Bishopsgate Street Without . . . . . | 22 | 2 | 4,110 | 7,366 | 79·22 | 7,542 |
| Blackfriars Bridge . . | 28 | 0 | 5,262 | 9,660 | 83·58 | 13,630 |
| Finsbury Pavement by South Place . . | 41 | 7 | 4,460 | 6,715 | 50·56 | 6,856 |
| Fleet Street by Temple Bar . . . . . | 23 | 8 | 7,741 | 11,972 | 54·65 | 8,920 |
| Holborn Hill by St. Andrew's Church . . | 35 | 3 | 6,906 | 9,134 | 32·26 | 13,372 |
| London Bridge . . | 35 | 0 | 13,099 | 19,405 | 48·14 | 19,738 |
| Southwark Bridge . . | | | — | — | — | 3,468 |
| | | | 48,922 | 76,564 | 56·50 | 89,384 |

TABLE showing the Vehicular Traffic between 8 a.m. and 8 p.m. on the working days in the months of March and April, 1873, during which observations were taken at certain points in the following streets :—

| Name of Street. | 8 a.m. to 8 p.m. | Per week of 6 days. |
|---|---|---|
| Cheapside, east of Milk Street . . | 10,847 | 56,523 |
| Poultry, by Grocers' Hall Court . | 9,224 | 49,010 |
| King William Street by Abchurch Lane . . . . . | 7,800 | 38,233 |
| Cannon Street by Bush Lane . . | 5,440 | 28,234 |
| King William Street, north of Arthur Street . . . . . | 16,781 | 93,081 |
| „ by Gracechurch Street | 13,239 | 76,349 |

The vehicular traffic increased 54 per cent. at Temple Bar from 1855 to 1865. At Holborn Bars it increased 32 per cent., and at Aldgate 76 per cent.

The traffic of Cannon Street increased from 5,200 vehicles in 1863 to 6,000 in 1865.

There is about one person travelling in vehicles to every 3·13 on foot, and whilst every provision must be made for so large a proportion of pedestrians by sufficiently wide footways, yet the vehicular traffic must always have the first consideration for space, as the accommodation is limited between the kerbs; the pedestrian traffic can accommodate itself more easily. The foot traffic, however, is far more vast numerically than the vehicular, but it is the latter which is the cause of the stoppages and delays. One great advantage, therefore, would result if many of the existing footways could be widened, to accommodate the pedestrian traffic, which is always greatest in the centre-most streets in the City, particularly those leading to the Bank centre, but the footways of the narrow city streets and those chiefly used cannot be widened so long as the vehicular traffic is so great. The Bank Centre seems to be the goal whither all pedestrians in the City are tending. By the formation of new streets, thus avoiding the Bank Centre by diverting some of the vehicular traffic, many of the city footways could be widened to their proper requirements.

The City day Census of 1881 gives 66,909 vehicles entering the City during the 16 working hours of the day, and 4,984 during the remaining 8 hours, or a total of 71,893 in 24 hours.—(See details following.)

## CLASS OF VEHICLES.

TABLE showing the Number and Class of Vehicles entering the City during 24 hours, in one direction only, in April, 1881.

| | |
|---|---|
| In 16 hours (day) . . . . . | 66,909 |
| In 8 hours (night) . . . . . | 4,984 |
| Total in 24 hours . . | 71,893 |

This number was made up as follows:—

| | |
|---|---|
| Cabs . . . . . | 15,966 |
| Omnibuses . . . . . | 6,176 |
| Other 4-wheeled Vehicles . . | 29,396 |
| Other 2 „ „ . . | 20,355 |
| Total . . . . . | 71,893 |

The heaviest class of vehicles is largely in the majority in and about the City; their speed is very slow. It would be a great gain if all such traffic could be, in a measure, confined to certain streets. Cheapside and Poultry should be free from all such heavy traffic; indeed, the traffic generally should be so controlled that only the lighter class of vehicles, with few exceptions, should pass the Mansion House; at present, however, this is impossible. No part of such a scheme as that now under consideration could be carried out, without materially assisting the object in view by contributing to localize the different kinds of traffic.

## PEDESTRIAN TRAFFIC.

The following numbers of persons traversed some of the principal lines of traffic *en route* to the City of London in 1881 in *one direction only* during sixteen hours of the day; the numbers going both ways would necessarily be about double the figures given:—

| No. | Inlets. | In 16 hours. | In 24 hours. |
|---|---|---|---|
| 1. | London Bridge . . | 72,131 | 78,943 |
| 2. | Blackfriars Bridge . | 39,585 | 43,567 |
| 3. | Southwark Bridge. . | 14,398 | 15,045 |
| 4. | Aldgate . . . | 46,284 | 49,405 |
| 5. | Bishopsgate Street . | 31,618 | 34,236 |
| 6. | Eldon Street, Finsbury . | 13,656 | 15,374 |
| 7. | Finsbury Pavement . | 26,598 | 28,616 |
| 8. | Beech Street . . | 17,153 | 18,223 |
| 9. | Aldersgate Street . . | 33,737 | 36,821 |
| 10. | St. John Street . . | 20,210 | 21,665 |
| 11. | Farringdon Street. . | 23,922 | 26,705 |
| 12. | Hatton Garden . . | 12,804 | 13,419 |
| 13. | Holborn Bars . . | 50,322 | 55,222 |
| 14. | Chancery Lane . . | 12,116 | 12,758 |
| 15. | Temple Bar. . . | 38,998 | 45,918 |

TABLE showing the Foot Traffic entering the City at its eight principal inlets in May, 1860, and 1881, going one way only.

| No. | Situation. | Total Number of Persons. | | |
|---|---|---|---|---|
| | | 1860. | | 1881. |
| | | In 12 hours. 7 a.m. to 7 p.m. | In 24 hours. 7 a.m. to 7 a.m. | In 24 hours. 7 a.m. to 7 a.m. |
| 1. | Aldgate High Street . | 29,160 | 42,574 | 49,405 |
| 2. | Aldersgate Street . . | 15,640 | 21,060 | 36,821 |
| 3. | Bishopsgate Street Without | 23,500 | 34,160 | 34,236 |
| 4. | Blackfriars Bridge . . | 24,199 | 31,642 | 43,567 |
| 5. | Finsbury Pavement. . | 21,150 | 27,024 | 28,616 |
| 6. | Fleet Street by Temple Bar | 25,050 | 36,950 | 45,913 |
| 7. | Holborn. . . . | 29,770 | 41,610 | 55,222 |
| 8. | London Bridge . . | 41,949 | 54,128 | 78,943 |
| | Totals . . | 210,418 | 289,148 | 372,723 |

About 54 per cent. of the daily foot traffic entering the City, at the time these observations were taken was through these eight inlets.

The movement and extent of the pedestrian traffic at certain points within the City is shown by the numbers crossing at the following centres in 1863 and in 1881 respectively. One is agreeably surprised to find there are so few accidents consequent upon such an enormous extent of traffic; but this is accounted for by the excellent police arrangements.

| | 1863. 8 a.m. to 5 p.m. | 1863. 24 hours (estimated). | 1881. 8 a.m. to 5 p.m. (estimated). | 1881. 24 hours (estimated). |
|---|---|---|---|---|
| At the Mansion House and Bank intersection there crossed over . . . . . | 56,235 | 84,352 | 72,542 | 108,814* |
| ,, London Bridge by King William Statue . . | 42,395 | 63,592 | 55,690 | 82,033 |
| ,, Ludgate Hill intersection . | 37,075 | 55,612 | 47,826 | 71,739 |
| ,, Cornhill by Leadenhall St. and Gracechurch Street . | 28,080 | 42,080 | 37,224 | 54,284 |
| Total number at these four principal Centres . . . | 163,785 | 245,636 | 213,282 | 316,870 |

## Railway Station Traffic.

The following is a list of stations, &c., with the numbers of passengers that emerged from them into the City in one day in April, 1881:—

* This is equal to 34,058,782 during the year, Sundays excluded. The number of vehicles estimated to pass the same spot during the year is 17,211,557.

| | Foot Passengers. |
|---|---|
| 1. Mansion House—District Railway . . | 13,528 |
| 2. Cannon Street—South-Eastern Railway . | 20,471 |
| 3. Fenchurch Street—London and Blackwall Railway . . . . . | 15,242 |
| 4. Liverpool Street—Great Eastern Railway . | 32,324 |
| 5. Broad Street—North London Railway . | 29,506 |
| 6. Bishopsgate Street—Metropolitan Railway | 8,292 |
| 7. Moorgate Street " " | 12,634 |
| 8. Aldersgate Street " " | 8,812 |
| 9. Holborn Viaduct—London, Chatham, and Dover Railway . . . . . | 2,777 |
| 10. Snow Hill— " " " | 2,532 |
| 11. Blackfriars—District Railway . . . | 3,541 |
| 12. Ludgate Hill—London, Chatham, and Dover Railway . . . . . | 18,390 |
| 13. All Hallows Pier. . . . . | 5,500 |
| Total . . . . . | 173,549 |

In 1866 the City Railway Stations emitted daily between 60,000 and 70,000 passengers, whilst at present that number is more than doubled. To show the extent of the general increase of traffic it will suffice to say that the London General Omnibus Company carried 1,357,654 more passengers in 1865 than in 1864. The increase of late years has been far greater.

## WIDTH OF STREETS.

The widths of the streets given in a previous list (page 170) are those of the most spacious within the City boundary, the larger number of the streets, however, are much narrower, and although they have not so much work to do, they are nevertheless, for the most part, crowded during the greater part of the day. The following is a list of some of the

principal streets next in importance, and the number of vehicles which passed through them between 8 a.m. and 8 p.m. on the days named during the years 1865 and 1866:—

| Situation. | Width of Carriage-way at Point of Observation. | | Total in 12 Hours. | Date of Observation. |
|---|---|---|---|---|
| | ft. | in. | | |
| Billiter Street . . . | 15 | 11 | 1,547 | October, 1865. |
| Barbican . . . . | 24 | 3 | 4,461 | February, 1866. |
| Chancery Lane . . . | 21 | 0 | 2,965 | February, 1866. |
| Crutched Friars . . . | 18 | 8 | 1,920 | February, 1866. |
| Fore Street . . . | 22 | 3 | 2,924 | February, 1866. |
| Giltspur Street . . . | 32 | 9 | 2,340 | February, 1866. |
| Gresham Street . . . | 29 | 10 | 4,506 | October, 1865. |
| Houndsditch . . . | 24 | 4 | 3,632 | July, 1865. |
| Lower Thames Street . | 17 | 5 | 1,460 | October, 1865. |
| Minories . . . . | 30 | 7 | 3,461 | February, 1866. |
| Old Bailey . . . . | 21 | 10 | 2,411 | November, 1865. |
| Princes Street . . . | 23 | 7 | 6,800 | March, 1866. |
| Queen Street, north end . | 15 | 1 | 3,471 | November, 1865. |
| Threadneedle Street . . | 13 | 10 | 3,743 | June, 1865. |
| Upper Thames Street . . | 23 | 6 | 2,781 | November, 1865. |

The traffic of course varies very considerably, from day to day, being very much more on certain days than on others, but the work which these narrow streets of the City have to accomplish compares favourably with that of many of the most important thoroughfares in the Metropolis, as shown by the subjoined list. The time, 12 hours, being the same as before:—

| Situation. | Date. | Width of Carriage-way at Point of Observation. | | Total No. of Vehicles. |
|---|---|---|---|---|
| | | ft. | in. | |
| Regent Street, south of Princes Street | July, 1865 | 52 | 1 | 11,343 |
| Westminster Bridge . . . . | ,, ,, | 56 | 8 | 11,609 |
| Oxford Street, east of Duke Street . | ,, ,, | 51 | 9 | 8,597 |
| Oxford Street, west of Well Street . | Nov., 1864 | 44 | 10 | 10,619 |
| Piccadilly, west of Half Moon Street . | July, 1865 | 50 | 8 | 8,220 |

Gresham Street is used by just *one-half* as many vehicles as pass along Piccadilly or Oxford Street, whilst more than *two-thirds* as many vehicles pass every day along Princes

Street as use either of those streets, and *four-sevenths* as many as pass along either Regent Street or over Westminster Bridge. Piccadilly, Oxford Street, and Westminster Bridge are certainly amongst, if not the, busiest thoroughfares outside of the City.

## TRAFFIC OVER THE BRIDGES.

The following Table gives the extent of the vehicular and pedestrian traffic over the City bridges, *i.e.*, so far as the figures can be traced since 1823. It will serve to show the extraordinary increase in regard to both at the different periods.

| Name. | 1823 (8 a.m. to 8 p.m.). | | 1850 (8 a.m. to 8 p.m.). | | 1860 (8 a.m. to 8 p.m.). | |
|---|---|---|---|---|---|---|
| | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. |
| London Bridge | 6,182 (Old London Bridge) | 89,640 | 13,000 | — | 16,000 (Increase 23 per cent. in 10 years) | — |
| Blackfriars ,, | 4,047 | 61,069 | 5,200 | — | 6,800 (Increase 31 per cent. in 10 years) | — |
| Southwark ,, | * | * | * | — | 1,000 | 1,400 |
| Totals | 10,229 | 150,709 | 18,200 | — | 23,800 | — |

| Name. | 1863 (24 Hours). | | 1865—July (16 Hours). | | 1881—April (24 Hours). | |
|---|---|---|---|---|---|---|
| | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. |
| London Bridge | 25,963 | — | †19,400 | — | 21,466 | 157,886 |
| Blackfriars ,, | 10,654 | — | 10,700 (November, 1865) | — | 14,584 | 87,134 |
| Southwark ,, | 1,094 | — | 4,700 (November, 1865, 8 a.m. to 8 p.m.) | 12,300 | 3,560 | 30,090 |
| Totals | 37,711 | — | 34,800 | — | 39,610 | 275,110 |

* Until Southwark Bridge was freed by the Corporation little or no use was made of it.

† 16 hours only. New Blackfriars Bridge, opened by the City in 1869, has resulted in a material relief to London Bridge.

Since 1823 the traffic, to and fro, across the City bridges daily has *increased as follows*:—At this time Southwark was not a free bridge. See note previous page.

| | | Passengers. | | Vehicles. |
|---|---|---|---|---|
| London Bridge has increased | by | 68,246 | and by | 15,284 |
| Blackfriars Bridge | " | 26,065 | " | 10,537 |

The following is an epitome of the increase of traffic over the three bridges since 1823:—

| Name. | 1823. | | 1881. | |
|---|---|---|---|---|
| | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. |
| London Bridge . . | 6,182 | 89,640 | 21,466 | 157,886 |
| Blackfriars " . . | 4,074 | 61,069 | 14,584 | 87,134 |
| Southwark " . . | — | — | 3,560 | 30,090 |
| Totals . . | 10,256 | 150,709 | 39,610 | 275,110 |

The following figures show the difference in the traffic over Southwark Bridge since it was freed, and the relief given to London Bridge. The gradients, however, are impediments, so that Blackfriars Bridge is preferred for vehicles.

| 1860. | | 1865. | | 1881. | |
|---|---|---|---|---|---|
| Vehicles. | Pedestrians. | Vehicles. | Pedestrians. | Vehicles. | Pedestrians. |
| 1,000 | 1,400 | 4,700 | 12,300 | 3,560 | 30,090 |

The three City bridges, with the exception of a contribution by the Treasury in regard to London Bridge, were constructed with City cash—the private funds of the Corporation—and are now under the jurisdiction of that body.

LONDON BRIDGE.—The extent of the vehicular and pedestrian traffic over London Bridge cannot be compared with that of the other two bridges; considerable relief has been provided, but it is evident that much more is still

required. It cannot be too strongly urged that to widen London Bridge, as has been frequently suggested, would not effect the desired object, for it would follow that the approaches would also have to be widened at enormous expense, and still the streets leading to it would have to remain as at present or shall Bishopsgate Street, Gracechurch Street, King William Street, and the approaches to the Bridge be widened as well. It were better, by far, to relieve all those streets now converging on the approaches to London Bridge by providing new streets concentrating towards the proposed new bridge near the Tower, hereafter dealt with. Although the cost would be greater, still the enormous and ever-increasing population eastwards, which contributes so largely to all metropolitan improvements, should reap a proportionate share of advantage in return. It must be admitted that for the Eastern Districts to have remained so long without either bridge or ferry accommodation across the river, below London Bridge, after so frequently asking for it, testifies, in a remarkable degree, to the passive endurance of the inhabitants under very trying inconveniencies.

BLACKFRIARS BRIDGE.—The vehicular traffic on Blackfriars Bridge in 1850, within twelve hours, was 5,200. In 1860 it had risen to 6,800, an increase of 31 per cent. in ten years. In 1865 the number had increased to 10,700, and in 1881 to 14,584 which means a very great relief to London Bridge, and accounts for the falling off of the Southwark Bridge traffic.

It will be at once evident, on looking at the key plan, how important this route for crossing the Thames is likely to become. The position is just midway east and west of Central London, with spacious approaches, and concentrating, as it does, the principal main arteries of traffic on both the north and south sides of the river, there can be very

little doubt that ten years hence the vehicular traffic over this Bridge will be equal to that passing over London Bridge.

SOUTHWARK BRIDGE.—The vehicular traffic over Southwark Bridge during one day in November, 1865, from 8 to 8, after removal of the toll, was 4,700, compared with 1,094 in 1863. This was a very large increase on the traffic that passed over this bridge before it was freed. The larger part of this traffic, estimated at 3,700, was taken from London Bridge. The increase is as follows :—

| | | |
|---|---|---|
| In 1850 | (practically *nil*) | vehicles. |
| „ 1863 | 1,094 | „ |
| „ 1865 | 4,700 | „ |
| „ 1881 | 3,560 | „ |

It will be seen how greatly London Bridge has been relieved by Southwark Bridge since it was opened free of toll in 1865 at a cost to the Corporation of £218,868. All of these bridges have been in some measure relieved since the Embankment was opened, many vehicles formerly passing from Westminster, &c., through Lambeth and Southwark, and across the Bridges, to get to the City, now go by way of the Embankment.

When the new Southwark Street was constructed it was thought that a considerable share of the traffic of London Bridge from that side would be relieved by Southwark and Blackfriars Bridges; that expectation has been fully realised. It is true Blackfriars Bridge has the larger proportion, and it is increasing daily; but it chiefly consists of the traffic going west or north-west. Vehicles with goods for the east have still to incur the delay of crossing London Bridge. As to Southwark Bridge, the gradients on both north and south sides are too steep—1 in 18 and 1 in 24 respectively—so that in its present state it can never render that extent of assistance to London Bridge which is desired,

it being almost impossible for heavy traffic to ascend it. To improve the gradients would certainly involve a very large expenditure. On the north side, which is the steepest, a Viaduct across Thames Street would be preferable, a suggestion which is certainly worthy of serious consideration, and if carried out would doubtless justify the outlay.* The distance is considerable between London Bridge and Blackfriars, and the extent of traffic every day towards the City is surprising, and the only way to relieve any particular bridge is to provide ample means of approach to other points. Certain main streets, Southwark Street in particular, were actually made to divert the traffic from one bridge to the other. Street improvements are much needed on the south side, and could be effected to favour any particular bridge at no very considerable cost. Upon the facilities of reaching any particular bridge will usually depend the bridge that is used for crossing the River.

The advantage of being able to get into and across the City and, also, northwards from the south or south east, say, for instance, from the direction of Great Dover Street, without having to pass either London Bridge or Blackfriars —the only choice being now between these two at present —would certainly be very great, and it will be readily seen with what facility this could be effected by means of the connecting street No. 21[a], if Southwark Bridge were made more useful. With such an improved approach to this bridge, as by a viaduct, in conjunction with the new lines of streets on the north and south sides as suggested, the present want would be met, without on the one hand having to pass the Mansion House, or on the other to cross over any street where the traffic of the same would be likely to cause any delay or inconvenience.

* The steepness of Southwark Bridge causes most of the heavy traffic to cross by way of Blackfriars Bridge, thus necessitating delay.

In order to assist in diverting the traffic from London Bridge and to incline the same to Southwark and Blackfriars Bridges the proposal, on the south side of the river (as explained more fully hereafter) is to construct two short streets, one previously referred to, connecting the Borough with Southwark Bridge Road and Blackfriars Road respectively. Starting from a point opposite Great Dover Street, one would join Southwark Bridge Road at the Southwark Street intersection where the Railway passes over, and the other would continue the line of Gravel Lane and Great Suffolk Street, to Southwark Street near Blackfriars Station. These would, no doubt, greatly assist the traffic from the south and south-east districts going towards Southwark and Blackfriars Bridges, and so take a part of London Bridge traffic. Any reasonable and feasible project that would lessen the concentration of so many vehicles at London Bridge, in order to improve the pedestrian traffic there, should not be lost sight of. In the year 1850 13,000 vehicles passed over London bridge between 8 a.m. and 8 p.m. In 1860 16,000 vehicles passed over it daily, showing 23 per cent. increase; and in 1863, before Southwark Bridge was freed, and before the new Blackfriars Bridge was completed, it increased to 25,960. At the same rate of increase at the present time, but for the relief given, there would be now crossing over within the same time daily at least 34,000 vehicles; but since then Blackfriars Bridge has been opened, and, as we have seen, takes a considerable part of that traffic. Still Blackfriars Bridge has its own locality to supply, which is increasing yearly as the Northern and Southern districts grow and the inhabitants multiply. Since that time, too, Southwark Bridge has been purchased by the City and freed. Both these bridges therefore are now a great and growing relief to London Bridge; further accommodation, however, is still needed.

## PRINCIPAL LINES OF TRAFFIC.

The larger part of the traffic may be said principally to move in two directions, viz. :—

1. *North and South.*
2. *East and West.*

## NORTH AND SOUTH TRAFFIC.

The northern traffic is collected and approaches the City, or crosses to the south, by five main streams—viz., Shoreditch, *viâ* Bishopsgate Street; City Road *viâ* Moorgate Street, Aldersgate Street, St. John's Street Road *viâ* Giltspur Street, and Farringdon Road; a large part of which has to cross over the river to the south of London. To do that the two main East and West lines—viz., the Cheapside line and the Cannon Street line—have to be crossed, thus creating great delay and inconvenience and oftentimes much confusion and danger.

The southern traffic enters the City by the only three bridges available, viz., London Bridge, Southwark, and Blackfriars Bridges. As already pointed out, Southwark being so steep, only the lighter traffic can use it, thus it is almost entirely confined to the other two bridges, so that London Bridge—being immediately adjacent to the commercial centre, and being in a direct line with the great intercepting artery Shoreditch, with its several tributaries, and being also so convenient of approach from the Docks' and shipping interests eastwards—and the Railway traffic—comes in for, by far, the larger share of the work. The extent of the traffic therefore concentrated on London Bridge is prodigious, being collected in the Borough from Great Dover Street, Newington Causeway, Borough Road, Long Lane, Bermondsey, and Tooley Street, it becomes mingled at the bridge with an enormous traffic from the

other side, collected at the north approach from Cannon Street, King William Street, Gracechurch Street, Eastcheap, and Fish Street Hill from Thames Street. The approaches, therefore, on either side of the river, as well as the bridge itself, may be said to be in a chronic state of crush.

Blackfriars Bridge collects the traffic more westerly, and also that going in a north-westerly direction. The area from which it is collected is very large—viz., from Walworth, Kennington Road, Lambeth, and a great deal from the Westminster side of the river, from over Westminster and Lambeth Bridges, insomuch that this bridge has quite enough to do. Fortunately the approaches and streets immediately contiguous thereto are very spacious.

## East and West Traffic.

The traffic passing East and West may be divided generally into two streams, and, until very recently, there was only one main stream from the East—viz., from Whitechapel *viâ* Leadenhall Street and Fenchurch Street; but Eastcheap has been recently reconstructed and continued to a higher level at its eastern end, so that much of the traffic unable previously to approach the east end of Great Tower Street will now be able by an easy gradient to pass along the entire length of the new street, collecting much of the eastern traffic in its course from the direction of the Royal Mint, East Smithfield, and Minories, which will no doubt materially assist the narrow neck at Aldgate, through which nearly the whole of the eastern traffic formerly had to pass.

The means of approach for the Western traffic are more numerous. There are three main lines of streets: Oxford Street and Holborn *viâ* Newgate Street; the Strand and

Fleet Street *viâ* Ludgate Hill, and the Thames Embankment *viâ* Queen Victoria Street. The larger part of the traffic, of the two former lines, converges at the west end of Cheapside, and proceeds along the same route to the Bank, and, although much of the traffic in Queen Victoria Street is diverted at the Mansion House Station and taken *viâ* Cannon Street towards London Bridge, still a large proportion of it passes the Bank, which will always be the very centre-point of London; but *there certainly is no need for all the streets to be made to concentrate at that point*, seeing the utter impossibility of enlarging the space there, to accommodate such an enormous collection of traffic.

It is unnecessary to dilate upon the vast area of the various districts which feed the main lines of streets running to the City. It is only necessary to consult a map of London to see the great number of streets intercepted by each of them; when Oxford Street and the Strand, Aldersgate Street, City Road, Shoreditch, Whitechapel, Borough Road, and Blackfriars Road, are all crowded, yet from all of them there is constantly being poured into the few City thoroughfares named nearly the whole of the traffic. Can one wonder, therefore, at the congested condition of these central streets, considering they are the recipients of that enormous aggregation of traffic?

## CENTRES OF TRAFFIC.

Between the various several great centres of Central London there is necessarily a vast communication, but up to the present time most of the outlying main arteries have proved sufficient for their work.

Within the City, however, it is different. The restricted conditions under which the traffic moves within the limited number of thoroughfares will be apparent, and the necessity

of extensive improvements obvious. Although the daily occupiers and visitors in the City number *close upon a million*, it must be remembered that there is not a centre of industry in the United Kingdom, nor any important city in the whole world, that has not its office, its agent, or its representative in some way in the great Metropolis, the combination of whose varied interests assists in creating the vast traffic that pervades its thoroughfares.

The streets most crowded are Cheapside and Poultry; Threadneedle Street; Old and New Broad Streets; Throgmorton Street; Cornhill; Lombard Street; Leadenhall Street; Aldgate; Bishopsgate Street; Gracechurch Street; Walbrook; Cannon Street; London Bridge Approach; Thames Street; East Smithfield; Newgate Street; St. Martin's-le-Grand; east end of St. Paul's Churchyard; Ludgate Hill; Bridge Street, Blackfriars; Fleet Street; Chancery Lane; Strand; Drury Lane; Little Queen Street; and St. Martin's Lane.

To any one conversant from experience with the actual facts, he would not hesitate in pointing at once to the following centres as being the most congested with traffic, and which in the first place require considerable relief, viz.: —The Mansion House and Bank Centre; London Bridge by King William's Statue; Broad Street by Liverpool Street and by Throgmorton Street; Bishopsgate Street by Threadneedle Street; Gracechurch Street by Lombard Street and Cornhill; Aldgate by Leadenhall Street and Fenchurch Street. The intersection at west end of Cheapside by the Post Office on the north side, and St. Paul's Churchyard on the south; Ludgate Circus; Temple Bar; Strand by Wellington Street; Charing Cross by W.C. Post Office; High Holborn by little Queen Street.

There are also certain special and important points of centrality in the part of the Metropolis now under considera-

tion—omitting for the moment the Railway Stations. These may be designated as those of Commerce, of Law, and of Pleasure. The first is the Bank—the very heart of the City; the second, the Law Courts; and the third, Charing Cross. A fourth may very properly be added, viz.—Smithfield, the Markets centre, perhaps as important as any.

### *Commercial Centre.*

The Bank Centre, eminently the most crowded of all, the centre to which commercial transactions seem to tend, can only be relieved by diverting from it a considerable proportion of the traffic, *which need not necessarily pass there*, provided some practical means were supplied by which such diversion might be effected.

### *Legal Centre.*

The locality of the Law Courts in the Strand is a fair field for improvement, and which cannot long be delayed, considering the enormous concourse daily gravitating to that centre; a reference to the plan will show the varied means of access suggested to this part without any great interference either with Fleet Street or the Strand.

### *Pleasure Centre.*

The Pleasure Centre, Charing Cross, is the most spacious, but at the point named—viz., between the station and Post Office—some improvement is much required, and can only be obtained by the proposed Strand relief street (hereafter explained), which would obviate the necessity of a considerable proportion of the traffic from Whitehall, Piccadilly, and St. Martin's Lane passing through the Strand at all.

### *Markets Centre.*

Smithfield is destined to be a centre of very great impor-

tance to London. Its utility and development could be wonderfully helped by proceeding without delay to make the needful convenient approaches to it. There are other Markets which would come under this head—viz., Billingsgate and Leadenhall Markets. The question of the food supply of London should have far more attention than it at the present moment receives, and the growing necessities of London will demand it before very long.

## MODERN IMPROVEMENTS.

(*Coloured Green on Key Plan.*)

During the existence of the Metropolitan Board of Works, created in 1856, now close upon 30 years, many millions of money have been spent on numerous metropolitan street and other improvements, affecting more particularly Central London. Some of these have been carried out in conjunction with the Corporation of the City of London, whilst the Commissioners of Sewers have also contributed largely to the expenditure for the same.

The City of itself constructed the Holborn Viaduct and accessary Improvements at a cost of £1,715,000; Cannon Street, £540,000; New Street from Farringdon Street to Clerkenwell, £88,000; rebuilding Blackfriars Bridge, £396,000; contribution to Eastcheap Improvement, £300,000; purchase and freeing Southwark Bridge, £219,000; widening Mansion House Street, £33,000, together with many other recent minor improvements costing upwards of a further £1,000,000; with one or two exceptions, the whole of these various sums were contributed by the Corporation from its private funds. During the past 35 years, however, upwards of *six millions* have been expended by the Corporation for various metropolitan improvements.

These large sums are irrespective of the improvements in and about Smithfield Markets, the Markets themselves, and the New Cattle Market at Islington, which have cost the Corporation in all about £2,000,000, not a farthing of which has come from the rates. New London Bridge and approaches, amongst other works, were also built by the City at a cost of £1,021,000 in addition.

Prominent amongst the improvements by the Metropolitan Board of Works are the Thames Embankment; Northumberland Avenue; Queen Victoria Street; Theobald's Road; Great Eastern Street and Commercial Street; Southwark Street; widening Gray's Inn Road; Middle Row, Holborn; and a long list of other improvements scattered broadcast over Central and Outer London, necessitating an expenditure of upwards of *ten and a half millions* of money, for street improvements only, all of which is paid for out of Metropolitan rates collected for the purpose, or rather for paying interest on the various loans obtained under Parliamentary powers, and for the purpose of repaying the same extending over periods varying from 30 to 50 years.

These have all without doubt already effected a vast improvement in the facilities for locomotion in the Metropolis, so much so that one wonders how the business of London was carried on at all before these were effected; but London is still growing and becoming more densely populated every day, and the necessity for still further improvements is evident and unquestionable.

Amongst the various improvements now in course of completion or contemplated by the City and Metropolitan Board of Works, and for which Parliamentary powers have been obtained, are the following:—Continuation of Tottenham Court Road from Oxford Street to Charing Cross; the completion of Theobald's Road by continuing the same

from Hart Street, Bloomsbury, to Piccadilly; New Road from Gray's Inn Road to the "Angel," at Islington; Widening Ludgate Hill; Widening the west end of Fenchurch Street; Widening New Broad Street, and London Wall, Broad Street, Queen Street, Mansion House Street, and Bermondsey Street, and numerous other smaller improvements, which will all tend to lessen the inconvenience and danger now existing in Central London, and to expedite its enormous traffic.

Although so much has been accomplished, yet more remains, insomuch that what has already been done, when the matter is fairly gone into, seems a small proportion in comparison with what must inevitably follow soon, or late, from sheer necessity, for the vast and increasing numbers who traffic in the streets and have business about the City and Central London daily.

The wants of the people also increase with their numbers, hence the increase of traffic, whether it be light or heavy. The vast pedestrian traffic to and from our numerous railway *termini* must not be lost sight of, for there are now five main terminus stations *within* the City boundary, whilst altogether there are eighteen railway stations pouring forth their tens of thousands daily within the same area.

Some of them have as many as six different companies' trains running into them, so that the traffic to and from them is very great, to say nothing of the Central Markets, Leadenhall Market, Billingsgate Market, and others contiguous to the very centre of the Metropolis where large numbers of people necessarily congregate.

When to this is added the extensive Goods', Dock, and other heavy traffic, and further to contemplate what it is growing to, it is evident that considerable forethought, and judgment and wisdom are needed to be able to determine

how to provide for the wants and future requirements of so vast a multitude within so small an area.

The problem has to be faced and grappled with, and the governing authorities will have to deal with it boldly and on a comprehensive system, and the sooner London sets about this great work in earnest the better, the cheaper, and the healthier it will be for its millions of inhabitants.

## FUTURE REQUIREMENTS.

(*Coloured Pink on Key Plan.*)

The Author has endeavoured to grasp the idea of what the requirements of Central London will be, say, twenty-five or fifty years hence in regard to its street traffic, both pedestrian and vehicular, for London will have, at the present rate of increase, at the earlier period named, a population not far short of *seven millions* of inhabitants; when railway stations will have increased and tramways multiplied, with factories, and workmen's dwellings, and Board schools by hundreds located in our midst, and with hundreds of thousands of workpeople and dwellers and children going in and out of them some four and some six times during the day.

It has been pointed out that in 1848 some 315,099 people, or *one-seventh* of the population, entered the City daily; that in 1860 during 12 hours only, 527,567 people entered during the day; and that it was computed that in 1866 nearly three quarters of a million entered the City daily.

It has been shown by the census of 1881 that 797,563 entered the City during 24 hours; and that by adding the City resident population of 50,526, we have a total of 848,089 people surging about the City daily. The numbers outside the City but immediately contiguous thereto would swell these figures very considerably.

It now remains to give a detailed description of the several new streets and other improvements which are suggested as a remedy for the existing unsatisfactory condition of things, not forgetting, as previously stated, to look some little distance into the future.

It would not be considered wise, were it possible, to divert the shop business from the main streets as now existing. I do not think the improvements would have that effect. The principal Centres and Streets before enumerated (pages 36 and 37) are nearly all contained in the main lines extending from the direction of Oxford Street and Charing Cross to Aldgate. The first section of streets, however, which will receive attention will be that along Cheapside and Poultry, passing in the direction of the Mansion House, as nearly all the traffic East and West tends to that point, excepting that going over London Bridge, which is partially diverted by way of Cannon Street. In the main lines of streets indicated, are located, with the exception of Piccadilly, Regent Street, &c., most of the principal shops of London.

## SUGGESTED NEW STREETS.

### (East of Farringdon Road.)

*New Street.—No.* 1. *Smithfield to Tower Bridge, viâ Gresham Street.*

It is proposed to relieve Cheapside, Poultry and the Bank, &c., by a new main street running East and West a short distance northward and nearly parallel thereto, designated New Street No. 1, the total length of which,—extending from Smithfield to the New Bridge approach at Little Tower Hill—would be a little over a mile and a quarter. It would not altogether, however, be a new street, but, for a consider-

able distance, it would consist of the widening and continuation of Gresham Street and Lothbury, some part of the former, however, viz: a short length, immediately east of Guildhall, is already wide enough. Along the eastern portion of Gresham Street the widening should be continued on both sides, to and across Old Jewry and Coleman Street, into Lothbury. Westward of Guildhall it should be widened, chiefly on the north side, as that would give the best line, and be at the same time the least expensive. Continuing it to Aldersgate Street, a strip of ground should be taken off from the north side of the Post Office yard. The new street at this point would intercept much of the traffic coming from the north, which would otherwise go along Cheapside. It would continue, from Aldersgate Street, across Little Britain and along Duke Street into Smithfield. The eastern portion of the street would be a continuation of Lothbury, north of the Bank of England, a portion of it being widened on the north side. Starting with the new portion of the street from the Alliance Bank at the corner of Bartholomew Lane and Throgmorton Avenue, it would pass behind the Stock Exchange and cross Threadneedle Street at the end of Old Broad Street. It would then continue in a straight line to a point near to the intersection of Bishopsgate Street, Leadenhall Street, Cornhill, and Gracechurch Street, intercepting the traffic at that important centre, where a spacious Circus would be formed, thus facilitating the traffic in all directions, including that to and from Leadenhall Market. Passing north or north-east of the New Market, slightly curving, the new street would cross over Lime Street to Fenchurch Street, through the site of Ironmongers' Hall, and, after crossing Fenchurch Street, would skirt the south-west angle and side of the Fenchurch Street Railway Station, leaving a large open space as the Station

Yard, which has for a long time required enlarging, and thence along to Little Tower Hill, in direct communication with the approach to the proposed new Bridge, which is to cross the Thames from the Tower by Irongate Stairs to Horselydown. Although this relief street, through the City from east to west, would cost a large sum, yet the cost would not be so very great as it at first appears, the recoupment, however, would be enormous; which together with the immense gain in convenience and expedition would fully compensate for the cost.

There is a large and increasing traffic eastwards to and from the Central Markets,—fast becoming a very important centre,—and which requires to be amply provided for. One of the most effectual modes of doing it would be the formation of such a street as this. A glance at the plan will at once reveal the very great advantages this line of street would confer, more particularly as, at the Smithfield end, it leads to a point north of the markets, to which converge the main lines of streets from King's Cross and the "Angel," at Islington, all intercepted by Charterhouse Street, but it would also especially constitute, with St. John Street Road, an important and continuous line of main streets from the North-western and Northern Districts, through the Market, direct to the East End, relieving the present lines of street to a vast extent. It would be without doubt the most economical that could be constructed to effect so great and important an improvement.

The property it would pass through, at some points, is very valuable; that would be the case in any important and useful scheme; but for a considerable part of its length it is only the widening of existing thoroughfares, and where the new portion of the street passes through property it is of such a class that would yield a very large recoupment for the new frontage. Every building removed in the line

of route would add greatly to the value of that portion of the land which would be left.

This street would also give considerable relief to all the now generally crowded streets east of the Bank. The new line would intercept the traffic of Throgmorton Street, Threadneedle Street, Cornhill, Leadenhall Street and Fenchurch Street, cutting across each of them, and absorbing a great deal of the traffic of each. It would be a ready outlet for all the narrower streets lying between Cheapside and London Wall, and northwards of it, and much of the western traffic could be diverted into it.

*New Street—No.* 1A. *Aldersgate Street to Giltspur Street.*

The utility of New Street No. 1 would be greatly enhanced if a spur were thrown out at Aldersgate Street, cutting across Christ's Hospital School to the corner of Giltspur Street, opposite St. Sepulchre's Church. This would at once relieve Newgate Street and the Post-office, by intercepting and diverting a considerable part of the present traffic, which is by far too much for its width although so recently widened. The entire length of the street would be about the same whether taken to Smithfield or to Giltspur Street. It can be only a matter of a few years before Christ's Hospital School will be moved from its present site.

*New Streets—Nos.* 2 *and* 2A. *"Times" Office to Moor Lane.*

The next line of street to which great importance is attached is that marked No. 2. It should commence at Queen Victoria Street on the east side of the "Times" office, and be continued in a straight line in the direction of St. Andrew's Hill, crossing Carter Lane to St. Paul's Churchyard, emerging at the corner by Dakin's tea warehouse. Thence along the north side of St. Paul's Church-

yard, setting back the churchyard railing on the one side and improving the line of frontages on the other, thus making the front uniform throughout. This would doubtless materially improve the character of the shops. On reaching Cheapside the houses west of Peel's statue, between the Churchyard and Newgate Street, should be set back nearly in a line with the New Post Office; this is much needed, considering the great amount of traffic at this point. Starting at the south end of the Post Office or near Sweeting's corner, and leaving a space enclosed, as now, a street should run in a north-easterly direction across Foster Lane, east of Goldsmith's Hall, to Gresham Street by Wood Street corner. This would at once link the Post Office and Newgate Street with the New Street No. 1. already described, and divert all the traffic *en route* for the north-east districts. Crossing Gresham Street as widened, New Street No. 2A would continue in the direction of Aldermanbury, that street for about two-thirds of its distance being widened on the east side, the next short street, Aldermanbury Postern, being similarly dealt with. By widening Moor Lane and Type Street on the east side, and widening out the narrow passage between the two, Chiswell Street would be reached, Bunhill-Row follows a direct continuation to the City Road, whilst Finsbury is immediately east of it. By this means a most convenient link would be formed between Westminster, Victoria Embankment, Blackfriars Bridge, and Cheapside; whilst Queen Victoria Street would be spared the traffic going northwards, and north-east; neither would any traffic going in that direction require to pass the Bank for that purpose, nor to go in a roundabout direction,—viz., *viâ* New Bridge Street and Ludgate Circus—to get there. It would also, to a very great extent, relieve Ludgate Hill, Newgate Street, and Fleet Street, and all the streets in its course by

intercepting the traffic, whilst the property taken for the purpose, considering the value of the New Street, would be inconsiderable. The convenience for the traffic going to Westminster or Charing Cross from the City, or from the East and North-East, by avoiding Fleet Street, would be very great.

*New Street—No. 3. St. Paul's Churchyard to Thames Street.*

The difficulty of crossing from north to south of the City without passing the Bank or crossing directly over a congested street is one of the most important problems to be solved in the whole of this question. The last-named street would effect this in a great measure so far as the Western and Southern traffic is concerned without any great contour; but, by widening the east end of St. Paul's Churchyard by setting back the railings, taking off the western corner next Cheapside and also by removing the projections of St. Paul's School and of the adjacent buildings, the traffic accommodation could be very considerably increased. The better plan, however, would be to remove the whole of the block from Cheapside to Watling Street, making Old Change the new front to St. Paul's. A diagonal street should run thence to Thames Street, obliquely crossing Queen Victoria Street, by Knight Rider Street, and by a continuance of the same to Queenhithe, a direct communication to and from Upper Thames Street would be effected. It is manifest this would be a great improvement and would be heartily welcomed by the warehouse owners and wharfingers in that locality, for at present there is no useful outlet for vehicles from Thames Street westwards, between Queen Street, by Southwark Bridge and Queen Victoria Street, by Blackfriars Bridge.

The gradients of the two sections of this street would be

1-100 and 1 in 20 respectively, the latter being somewhat easier than that of the south end of Queen Street, and would compare favourably with the gradient of the new street from Monument Yard to Billingsgate, now in course of formation by the Commissioners of Sewers. The length, however, of the steeper portion would only be about 500 feet. By commencing the Thames Street end of this street further eastwards than Queenhithe the gradient could be greatly improved. It will be seen on reference to the Plan that this line would take some valuable warehouses, but the new frontages would also be valuable, and would probably recoup the entire cost.

*New Streets—Nos. 4 and 4A. Smithfield to Whitechapel High Street viâ London Wall.*

It is proposed to form another line of street, running East and West through the City, still further North of the proposed extension of Gresham Street, and nearly parallel with it. Considering the great and increasing traffic to and from the Central Markets, and more particularly the Goods Depôts in the vicinity, at Whitecross Street, Farringdon Road, and the splendid group of Markets themselves in that locality, special attention should be given to it. To a great extent this traffic is eastwards, or to and from the several Goods Depôts at Farringdon Street; Whitecross Street; Eldon Street, off Mansell Street; Whitechapel; Deptford, &c. Nor must the business of the St. Katherine Dock Warehouses, Devonshire Square; the Victoria Dock Railway Depôt, and the vast Dock business generally still further East be lost sight of. There is also the 'bus and cab traffic to the Broad Street and Liverpool Street Stations, and from the other Stations along the line of railway to Farringdon Road, which would all be received into this street and dispersed from it. New Street, No. 4,

therefore is intended to start from the Smithfield centre and to run almost due east to Aldersgate Street, thence slightly curving round into and through London Wall and Wormwood Street, both of which would be widened throughout—Wormwood Street is now being widened and a considerable portion of London Wall will fall into the Corporation in about 15 years time—crossing Bishopsgate Street, near Camomile Street, it would continue in a straight line across Devonshire Square to Whitechapel and end at the Commercial Road and Whitechapel intersection. These two latter are amongst the broadest streets in London, and form the two main arteries eastwards, to the East and West India and other Docks, and the shipping locality generally. This new street would be a fitting continuation of Commercial Road westwards.

From the same point at Bishopsgate, for all traffic going towards the New Bridge, greater facilities should be given by widening and improving Camomile Street, Bevis Marks, and Duke Street, all parts of the same line, forming a new street emerging at Aldgate and continued into the Minories, thus comprising New Street, No. 4A, a further direct line of communication to the new Tower Bridge. Aldgate at this point should be widened from Fenchurch Street to the Minories. It is also obvious that this new line of street would be a great acquisition for the heavy traffic before referred to, and would enable the greater part of it to be diverted from the direction of the Mansion House and Bank Intersection.

*New Street—No. 5. Whitechapel to Tower Bridge.*

From the intersection of Whitechapel and the Commercial Road a line of street should be made which might be termed the Approach Road to the proposed New Bridge at Little Tower Hill. This street would evidently collect

a very large portion of the traffic of the eastern districts. It would run in a South-West direction to Mansell Street by Great Ailey Street. Mansell Street would be widened and continued past the Victoria Dock Railway Depôt, it would cross Royal Mint Street and be continued to Little Tower Hill and the Bridge, and thus intercept a large portion of the traffic that now, of necessity, goes towards London Bridge.

It should be mentioned here that Royal Mint Street requires to be improved by setting back the frontages of Royal Mint Street as shown, and continuing the improvement to Cable Street, the latter also being widened, as far as Cannon Street Road, to meet the necessities of the Dock traffic. This would materially facilitate the traffic of that locality, and give a ready outlet into this street and to the New Bridge Approach. Upper East Smithfield should also be widened to St. George Street and High Street.

In continuation of this latter street on the west of Little Tower Hill an opportunity presents itself to make the continuation of Eastcheap complete through Trinity Square, by setting back a part of the railing, and by widening George Street, north of Postern Row—or removing the block of buildings altogether—or Postern Row might be widened instead. There would then be a complete route between London Bridge approach, and the New Bridge approach, to the East of London, *viâ* Eastcheap, and the destination of the traffic would be made easy in whichever direction it might be going.

*New Street—No. 6. Viâ Middlesex Street.*

From Great Ailey Street the widening of Mansell Street should be continued northwards to Whitechapel, and it may be hereafter of very great advantage if it were continued across Whitechapel and New Street No. 4 in a

north-westerly direction, by widening Middlesex Street and Sandy's Row, thus, intercepting some of the traffic from New Street No. 4 going towards the proposed Bridge and finally opening out into Bishopsgate Street, opposite Sun Street, bringing Barbican, Chiswell Street, &c., in a line with it, making a continuous street from the New Bridge *viâ* Mansell Street into Finsbury, the same being also in a direct line to the Markets.

*New Street—No. 7. Bread Street to Aldermanbury.*

The traffic going direct North and South should be further assisted by widening Bread Street from Queen Victoria Street to Cheapside, continuing the widening through Milk Street, west of the Old City of London School, thence into Aldermanbury, being intercepted by New Street No. 1. This street would also greatly assist in getting quickly northwards from Thames Street, with which it would communicate direct through the lower portion of Street No. 3.

*New Street—No. 8. Old Bailey to Blackfriars Bridge.*

Old Bailey should be widened and continued across Pilgrim Street into Broadway and down Water Lane to Queen Victoria Street, opening up and improving the present tortuous narrow lanes in that locality and materially facilitating access to Ludgate Hill Station, the approach to which is in great part from this direction. It would also give improved and ready access from Ludgate Hill to the proposed new Station now being constructed at the West End of Queen Victoria Street.

*New Street—No. 9. Thames Street to Fenchurch Street Station.*

A further short street is much needed from the lower end of Thames Street, in other words the extension of

that street into the new Great Tower Street, and continued, by widening Seething Lane, to Fenchurch Street Station. The proposed new street from the Monument to Thames Street, now being constructed by the Commissioners of Sewers before referred to, would not render this unnecessary; on the contrary, the construction of that street seems to point to the need of an outlet from Thames Street in the direction of the Tower as a necessary complement to it, or, it is feared, the confusion at London Bridge will not be improved considering the increased traffic from Billingsgate through the new street, which would all meet at this point. Besides a great deal of the traffic will hereafter go over the new Bridge, and, considering the congested state of the traffic at Billingsgate, an outlet from Thames Street is required in that direction, indeed will become imperative, thereby considerably relieving it. Thames Street, of course, should be widened from end to end, a line being laid down, taking off a strip here and there, on one side or the other in order to obtain the best line where facilities offer for so doing. An improvement of this kind, already begun in places, would greatly improve locomotion and be extremely beneficial to the wharves and warehouses in that locality.

*New Street—No.* 10. *Shoreditch Church to Bethnal Green Road.*

A new connecting street between Old Street Road opposite Shoreditch Church and Bethnal Green Road is required. It should commence immediately north of St. Leonard Church, crossing Virginia Row (in an oblique direction), also Mount Street and Brick Lane, finishing at the North East District Post Office. This would be a fitting completion of a great improvement, of which a considerable part is already carried out by the Metropolitan

Board of Works, and which, when continued to its western extremity, with this connecting link added, a direct line of street would exist from Victoria Park to Oxford Street and Piccadilly. A slight though useful improvement in this locality might be effected in Hoxton Street by widening and continuing Fanshaw Street into it.

*New Street—No.* 10*a. Bethnal Green Road to Hassard Street.*

From the eastern end of this street a new street should run almost due north to meet the south end of Hassard Street. For two-thirds of its length it would consist of a widening of the Gibraltar Street end of New Street No. 10. North-east of this street a small but important improvement could be effected by *cutting through a short length* of houses to make a continuance of Great Cambridge Street to Barnet Street. Both of these streets would bring Columbia Market within easy reach of a much larger population. Eastward of this street a small but useful improvement could be made by a continuation of Prescot Street to Back Church Lane.

*New Street—No.* 11. *Great Eastern Street to City Road.*

Another important connecting street is required, between the City Road and Great Eastern Street, crossing Old Street, a little distance westwards of the last named improvement. This would give a direct main line from the "Angel" at Islington to the proposed New Bridge. It would divert all the traffic from the City Road, Old Street, and Shoreditch, going eastward, direct into Whitechapel, thence along the proposed Approach Road to the Tower Bridge.

*New Streets—No.* 12 *and* 12*a. Amwell Street to Smithfield and Farringdon Road to St. John Street.*

Some improvement is also required north of the Central Markets, to effectually connect the same with the North of London. This could be effected by connecting Amwell Street and Rosoman Streets with Clerkenwell Green *viâ* Red Lion Street. Red Lion Street should be opened out southwards and continued, which, together with slight improvements at the bend, by, and on each side of, Cross Street, would conveniently end directly opposite the Markets. In this case both Rosoman Streets would have to be widened and continued through a locality studded with Courts and angular, tortuous streets and passages near the House of Detention; this, as much as any part of London, requires improvement, and substituting a main line direct into Clerkenwell Green opposite the Session House. This street, moreover, at Rosoman Street end, would join the new street about to be constructed by the Metropolitan Board of Works from Gray's Inn Road to the "Angel," Islington.

St. John Street requires widening in places, whilst, if Corporation Row and Bowling Green Lane were also widened, with a possible widening of Lever Street eastward, a direct communication could be obtained West and East from Farringdon Road to the City Road.

Before leaving the improvements eastwards of Farringdon Street, which pretty nearly divides Central London, East and West, a few other improvements should be pointed out, which suggest themselves to one as being important, and which will become imperative in the near future. For instance, the widening of King Street, thus making a good approach from Southwark Bridge to Guildhall. The widening of Queen Street is now being completed by the Commissioners of Sewers. The widening of a part of Coleman Street,

also of Basinghall Street. The widening of Threadneedle Street already partially accomplished. The widening of a part of Throgmorton Street, near the London and Westminster Bank. The widening of Broad Street throughout its entire length, already commenced, cannot be long delayed, to provide for the immense pedestrian traffic to and from the three Railway Stations at its northern end. The widening of Fenchurch Street and Leadenhall Street in places and at their junctions with Gracechurch Street and Aldgate respectively. The widening of Walbrook from the Mansion House to Cannon Street. The traffic of this street is very much increased since the completion of the Inner Circle Railway which has a Station at the end of the street. Central Street, a continuance of Golden Lane, requires widening to get direct commmunication northwards into City Road. The widening of Hoxton Street, a small improvement off Columbia Road. The widening of Long Lane between Aldersgate Street and the Markets is urgently needed. If East Smithfield were widened and that improvement continued through George Street, &c., it would be a great convenience for the extremely heavy traffic of that locality. Narrow streets, in such cases, are very expensive to keep in repair.

## SUGGESTED NEW STREETS.

### (West of Farringdon Road.)

The Western traffic accommodation also requires very great consideration. The locality about the Law Courts particularly needs serious attention, as it has already become a very important centre. Access to the Courts should be made easy from all parts of London. The traffic of the Strand can scarcely be increased, excepting at that part immediately opposite the Courts, which is generally

sufficient, and at the point near Child's Bank, where it is being widened, as the property falls in, thus rendering it of sufficient width for all the traffic of the locality.

*New Street—No.* 13. *High Holborn to Royal Courts of Justice.*

In the first place, a new street should be constructed in continuation of Southampton Row southwards, by widening Little Queen Street, and continuing it through the buildings between Great Queen Street and Sardinia Street, thence, by a gradual curve, into Clare Market and, through St. Clement's Inn, to St. Clement's Church. The property in this locality is of such a character that the entire removal of the existing buildings would be a great sanitary advantage, and valuable building frontages would be obtained to the New Street. Carey Street, Portugal Street and Lincoln's Inn Fields should be opened out into it. This street, it will be readily seen, would form a continuation of a main thoroughfare direct from Camden Town to the Law Courts, which would be of great public advantage.

One could not fail to mention, when referring to the improvements about, and approaches to, the Law Courts, that Great Turnstile and Newman's Row should be widened, on the north of Lincoln's Inn Fields, and the remainder of Searle Street widening on the south side. Bedford Row requires to be continued into High Holborn.

*New Street—No.* 13*a*. *Drury Lane to Royal Courts of Justice.*

From the intersection of Long Acre by Drury Lane and Great Queen Street, a spacious street should be formed in a line with Great Wild Street, widening the same on its northern side and Vere Street on its southern side, to join the last-mentioned street opposite Portugal Street. This

would not only form a continuation of Long Acre and Piccadilly *viâ* Cranbrook Street and Leicester Square in a direct line; but the cutting off of the corners at the junction of Long Acre and Great Queen Street would be an improvement at that point, by rounding off the corner at Broad Street and by widening Drury Lane as indicated, would give the best and most direct approach to the Law Courts from Oxford Street and Tottenham Court Road.

*New Street—No.* 14. *Drury Lane to Regent Street.*

From Drury Lane, in continuation of Great Queen Street westward, a new street should be made across Endell Street to Seven Dials, thence crossing over the intersection of the proposed streets—from Tottenham Court Road to Charing Cross, and from Oxford Street to Piccadilly respectively—also crossing obliquely over Greek Street, Dean Street, and Wardour Street, it would curve slightly into Broad Street, and be continued into Regent Street. This would open up Soho, a locality that much needs it, and it would give a very useful thoroughfare direct from Regent Street to the New Law Courts, the Strand, or Holborn without having to go around by Oxford Street or Leicester Square as at present.

The continuation of Dean Street into Leicester Square, a very short length of new street, would be an advantage.

*New Street—No.* 15. *St. Martin's Place to Royal Courts of Justice.*

The principal object, however, is to relieve the Strand from its ever-increasing burden, and the only practical way of doing this is by forming a second line of traffic just north of it, commencing at St. Martin's Place north of St. Martin's Church. It might be of advantage if the new

street commenced from Haymarket (*see Plan*). There should be a broad outlet from Chandos Street. Maiden Lane, Tavistock Street, and York Street, should be all widened, as shown, and the street curved around into Drury Lane, and by widening Wych Street on the north side a direct approach would be obtained to the front of the Law Courts. From Drury Lane a fork street should also be made, crossing over No. 13 Street from Holborn, to meet the prolongation of Carey Street, so that an approach both to the front and rear of the Law Courts could be obtained. An arm should also be thrown out towards the Strand opposite the Church of St. Mary-le Strand, the porch being removed for this purpose, thus getting a ready access from the Strand, at this point, for all traffic going towards High Holborn, Oxford Street, and the West and North-West.

The Strand itself should also be further improved by widening Holywell Street throughout, and also widening the Strand on the north side from King's College to the point opposite Arundel Street. The Strand, moreover, at its western end should be continued through Spring Gardens into the Mall, giving a direct line from Buckingham Palace to the City, thus improving the New War Office and Admiralty site.

### *New Street.—No.* 16. *St. Clement Danes' Church to Temple Station.*

Very considerable relief to the Strand traffic could be gained by making a diagonal street from St. Clement Danes' Church to the Temple Station so that the traffic may be diverted to the Embankment, whilst much time would be saved in getting to the Law Courts from the West and South-West Districts by this route. It needs but few words to show how very important each one of

these new streets would be, especially considering the frequency with which the Strand is disturbed for paving, gas, and water and other works, during which time all the traffic is deranged. The gradient of this street would be a great improvement on that of any of those that now run due North and South in the vicinity.

*New Street—No.* 17. *Fleet Street to Blackfriars Bridge.*

Fleet Street, as before referred to, also requires considerable relief, and besides widening the street on an agreed plan, in places as opportunity occurs, one could confidently recommend the formation of a new street commencing from the bottom of Fetter Lane. It should pass obliquely through Serjeants' Inn, across Bouverie Street and Tudor Street, by Whitefriars Street, and curve round on the vacant City land into New Bridge Street, by widening William Street, north of the Royal Hotel. This would have the effect of avoiding the greater part of Fleet Street, Ludgate Circus and Ludgate Hill, so that whether the traffic be going east or north-east it could readily pass either along Queen Victoria Street or through Street No. 2 to St. Paul's Churchyard and get away in that direction.

*New Streets—No.* 18 *and* 18*a. Holborn Circus and Gray's Inn Road to Record Office.*

From Holborn Circus, at Meeking's corner, proceeding through Bartlett's Buildings, a curved street, No. 18, should be constructed direct to the Record Office. From this point Fetter Lane should be widened to Fleet Street, where there should be a spacious circus, and whence New Street No. 17 would start.

In the next place Chancery Lane should have attention. In order to obtain relief for it a continuation of the line of Gray's Inn Road might be made straight through

Staple Inn, across Castle Street to Fetter Lane by the Record Office, constituting New Street No. 18A. At the latter point there should also be an important intersection or Circus.

*New Street—No.* 19. *Bride Street to Chancery Lane.*

On the north side of the Record Office a new street of good width should be constructed westwards into Chancery Lane, nearly opposite Carey Street, thus continuing the street from Meeking's corner direct into Chancery Lane, and the Law Courts. From the same intersection eastwards this street should be continued into Stonecutter Street and Farringdon Street, by crossing over Great New Street and widening Little New Street.

By these last-named improvements means of access urgently needed to the Law Courts from the direction of Holborn, Holborn Circus and Ludgate Circus would be supplied without the necessity of passing along Fleet Street. It would be of equal importance in getting quickly into Fleet Street from Gray's Inn Road, and the North, instead of by the present crowded, circuitous, and narrow routes of Holborn and Chancery Lane respectively.

## SOUTH SIDE OF THAMES.

*New Street.—No.* 20. *Tower Bridge to Bermondsey New Road.*

On the south side of the river the approach to the upper level of Bridge, by means of a viaduct passing over Tooley Street, should be continued to Bermondsey New Road, thereby giving direct communication between the present great arteries on the south side of the river, viz.: Old Kent Road, New Kent Road, and Great Dover Street, and those mentioned on the north side. Ready access would,

therefore, be obtained to the proposed New Bridge from this locality. If this continuation were not made, a labyrinth of narrow streets would intervene between the new bridge and these important arteries, rendering it unapproachable from the great thoroughfares on the south side, consequently its use would be very much diminished. This new route could be made the chief means of access to the East from the South, also from Westminster and Lambeth Bridges.

*New Street—No.* 21. *Tower Bridge to Waterloo Road, &c.*

From the low level approach to the New Bridge and from Tooley Street, and further eastwards on the south side, a new street should also be constructed by way of Snowsfields to the Borough High Street, and continued to Southwark Bridge Road, across Great Suffolk Street, and be further continued into the Waterloo Road, near the "Victoria," by widening the present Friar Street and Webber Street. From this trunk three branch streets should run, one, No. 21A, being a continuation of Great Dover Street into Southwark Bridge Road by Southwark Street, another, 21B, would consist of Gravel Lane being widened and continued into Southwark Street by Blackfriars Station, and a third, 21C, a short branch from Snowfields into Tooley Street in a line with the Thames Subway. By this means the enormous traffic going north and east, instead of passing over London Bridge, would be intercepted and taken over the New Tower Bridge.

Two fork streets, 21D and 21E, in continuation of Tooley Street, eastwards to Abbey Street, and thence branch off towards Neckinger Road and Jamaica Road respectively as shown, would prove of advantage to the locality.

Improvements of less magnitude on this side of the river, though of some importance, might be effected by connecting

Belvidere Road and Commercial Road by a more direct way, and by continuing the latter street eastwards by widening and straightening the existing narrow and crooked streets into the proposed approach to the southern embankment.

## SUGGESTED SOUTHERN EMBANKMENT.

### *Westminster to Blackfriars.*

For a long time past it has occurred to the Author that an embankment on the south side of the river from Westminster to Blackfriars Bridge, would prove of great utility, not only as an important main artery of traffic in the Metropolis but also as a means to prevent the constant overflow of the Thames, with its accompanying dangers and losses. It should form a continuation of the line of the Albert Embankment by St. Thomas's Hospital, access being obtained to it from Westminster Bridge Road by the side of the bridge with a footway connecting the two under Westminster Bridge. It should be 60 or 65 feet wide, leaving a space between it and the wharf frontages for barges to lie alongside, the inside waterway being approached here and there by means of lock-gates through the embankment, with the usual mechanical means of opening and closing. These lock-gates could be kept closed when the tides ebb so that the wharves might always have water to unload either at high tide or at any time of the tide, as may be needed.

This embankment would hide the present very unsightly appearance of the south bank of the river, particularly at low tide, and effect a very great improvement without the necessity of a very large expenditure of public money to compensate the several wharfage-owners for interference with either their premises or their rights. It would also be a great advantage to all frontagers and barge owners,

as barges could load and unload at all times of the tide. The embankment could run underneath the South-Eastern Railway and Waterloo Bridges to Blackfriars Bridge, and approaches to the Embankment for pedestrians could be made by means of steps at both of these bridges, also a carriage-way approach for vehicles could be formed at Blackfriars Bridge in continuation of Southwark Street. The embankment might, with advantage, be continued to London Bridge, and join Tooley Street by passing first underneath Blackfriars Bridge and the Railways to Bankside, thus forming a new broad street along the south bank of the river in place of the present narrow and crooked streets of the locality. The remainder of the length of this street would pass, in its course, under Southwark Bridge and the South Eastern Railway, to Tooley Street, under London Bridge, with another approach from London Bridge, as now existing. This would give an additional important thoroughfare from East to West on the South side of the river from Westminster to Bermondsey.

This Southern Embankment would not greatly reduce the width of the river, which would still be as wide, at any point where interfered with, as it now is between the Houses of Parliament and St. Thomas's Hospital, whilst it would be much wider than the river is either at Southwark Bridge or London Bridge.

## THE PROPOSED NEW BRIDGE AT THE TOWER.

This is a very important question. A central feature of any considerable system of Metropolitan improvements would be an additional bridge below London Bridge, and which, of necessity, cannot much longer be delayed, as it will be impossible to carry on the vast business of the East of London for any considerable period without it, except at great inconvenience and loss.

A point somewhere near the Tower of London has been fixed upon as the best position for a New Bridge, and Lt.-Colonel Haywood, nineteen years ago, suggested Irongate Stairs, at the foot of Little Tower Hill, as being the most convenient point for a new bridge to start from on the north side, finishing at a point slightly above Horseydown Stairs on the south side. The approaches would of course extend a considerable distance further on either side.

Such a bridge would unquestionably be of great benefit, and would very materially relieve London Bridge, and not only so, but also the main lines of streets leading to it on both sides of the River from Shoreditch to the "Elephant and Castle," and particularly the following, viz.: Leadenhall Street, Fenchurch Street Eastcheap, King William Street, Cannon Street, Lombard Street, and Cornhill—as from all these streets the traffic is constantly being blocked, as it converges upon the only one line running northwards on that side of the river, the consequent inconvenience is increasing daily. To say that the widening of London Bridge or any other proposal whatsoever short of a New Bridge could be adopted which shall be equal to the requirements is little short of folly. At present the traffic at the approaches to London Bridge both North and South is at times so continuously and hopelessly blocked as to make the question of relief one of immediate necessity.

Referring to the question of widening London Bridge, the Engineer to the Commission of Sewers, in a Report, says on this point:—"The widening of London Bridge by throwing out footways on either side should be adverted to. This is physically practical, although it could only be carried out to the utter destruction of the architecture of one of the finest bridges of Europe; it would not, however,

help the difficulty of the traffic, as it is upon the approaches, on each side of the bridge, where the obstructions mainly take place. At both of those places there is the confluence of several streams of traffic, the carriage-ways, it is true, are not quite so narrow there as the bridge itself, but they are subject to carts standing to load and unload, which the bridge is not; and therefore, widening the bridge would be useless unless the approaches were made wider also. The proposal to widen London Bridge in the manner described is indeed but one of those expedients by which it is sought to procrastinate large improvements in order to prevent immediate outlay, with the result that the difficulties for the time may be lessened, but the expense of the improvements, ultimately inevitable, is augmented. Such expedients are wanting in true economy."

In the year 1879 the Metropolitan Board of Works laid before Parliament a scheme for a high-level bridge to cross the river by one span between Little Tower Hill and Horselydown, giving a height of about 80 feet above the waterway, sufficient for the largest vessels to pass under on lowering their topmasts. The merits of this scheme failed to commend themselves to a Select Committee of the House of Commons, as, after a long inquiry, extending over twenty-seven days, the Committee came to the conclusion that the preamble of the Bill had not been proved.

In the years 1881 and 1882, after an interval which had afforded time for the public discussion of the question, and for the mooting of any proposals which might seem to be attended with advantage, the Board, by one of its Committees, entered into conference with the Bridge House Estates Committee of the Corporation, whose attention had also been occupied with the subject. The conference was initiated in the hope that by friendly discussion, and, if practicable, by joint action on the part of the two bodies, a

way might be found of satisfying the public wants without injuring the interests of trade and shipping in the Port of London. The issue of the conference was not favourable to the realisation of this hope. The City authorities, indeed, expressed doubts whether there was such a proved need of a new permanent way across the river as to justify the great expenditure that the formation of a new bridge or tunnel would entail, and they were not prepared to give their aid in the furtherance of either the one or the other.

Finding thus that it could only rely upon its own action and its own resources, the Board referred the whole question to one of its committees, and the Board's engineer, having been called upon by the committee for a report, brought forward a comprehensive scheme embracing three new lines of communication, namely—(1) a high-level bridge between Little Tower Hill and Bermondsey; (2) a tunnel between Shadwell and Rotherhithe; and (3) a tunnel between Blackwall and Greenwich and Woolwich. The total cost of this comprehensive scheme was estimated to exceed five millions sterling.

The Metropolitan Board had always regarded the project of providing accommodation for the traffic between the north and south sides of the river below London Bridge as one the accomplishment of which must to some extent depend upon the continuance of the subsidiary revenue derived by the Board from the London coal duties. The duties, as now enacted, are leviable until July, 1889, the Board's own interest in them, however, expiring one year earlier.

The Board therefore determined to appeal to the Government for a continuation of the coal duties, but the result was unsatisfactory. In 1882 a joint application by the Metropolitan Board of Works and the Corporation of

the City of London was made with the same object, but with a like result. There being an objection to these duties as a source of revenue, the Secretary to the Treasury also hinted at the growing impatience of the public under taxation. The Board, however, defended its financial policy, pointing out that although the repayment of the cost of their improvements is spread over a certain number of years, yet care had always been taken not to saddle upon ratepayers of the future those burdens which should properly be borne by the present generation. At the same time the Board was quite satisfied that there was a need in the eastern districts of London for better accommodation for the traffic between North and South, and that the inhabitants had a good claim for this need to be supplied.

The scheme of a bridge, whether at a high or low level, was attended with many difficulties and objections, on the score both of expense and of interference with the trade and shipping of the port. After due deliberation, therefore, it was ultimately resolved to apply to Parliament for power to make a subway or tunnel under the river from Nightingale Lane on the north side to Dockhead on the south. Further down the river it was proposed to establish two steam ferries for the conveyance of vehicles, with proper approaches on each side. It was felt that these ferries would afford some accommodation for the traffic in the districts far east, although not all that might ultimately be required; and that they could be superseded by tunnels or subways when such improved methods of transit might be found more urgently necessary. The plans for these works and the Bill by which power is sought to carry them were deposited as required by the standing orders of Parliament, with a view to sanction being obtained for them.

Other bridge schemes were also before the Parliamentary Committee, and considerable evidence was heard, the

result being that the Committee, in lieu of approving any one of the schemes before them, and after full deliberation, reported in favour of the erection of a low-level bridge, with convenience for shipping to pass, near the Tower, and suggested Little Tower Hill as the most suitable position, at the same time intimating that the Corporation of the City of London was the proper authority to have the control of the matter. The Court of Common Council, on receiving this intimation, referred the whole matter to the Bridge House Estates Committee to bring up a report; and on the 28th day of October the Court resolved to apply to Parliament for powers to construct a bridge from the point named across the Thames to Horselydown, with an approach from Tooley Street on the south side. The Chamberlain at the same time reported that an amount (£750,000), equal to the estimated cost of the bridge, could be raised on the Bridge House Estates, and recommended that the same be applied to the construction of the new bridge. The Report further stated that plans had been deposited for the consideration and approval of Parliament next Session. There is now every reason to believe that the long-looked-for new bridge will be commenced possibly some time next year, and should it be the kind of bridge actually required, will be one of the most important acquisitions to the Metropolis in the way of public improvements since the Thames Embankment was constructed. This can only be the beginning of a series of new streets and other improvements which must necessarily follow, in the East of London, so soon as the New Bridge is fairly in hand.

No doubt considerable objections will be raised, even up to the very last, by certain classes, to the carrying out of so great an improvement as an additional bridge, particularly by the shipping interest, whose rights must doubtless

be considered, and should weigh somewhat, as to the kind of Bridge to be constructed, but the ratepayers would do well to watch the matter, to ensure the speedy accomplishment of their wishes. It may, however, take the form of expressing a desire to widen London Bridge or to have a tunnel in lieu of a bridge, either of which would be manifestly inadequate to the public requirements.

## THE KIND OF BRIDGE REQUIRED.

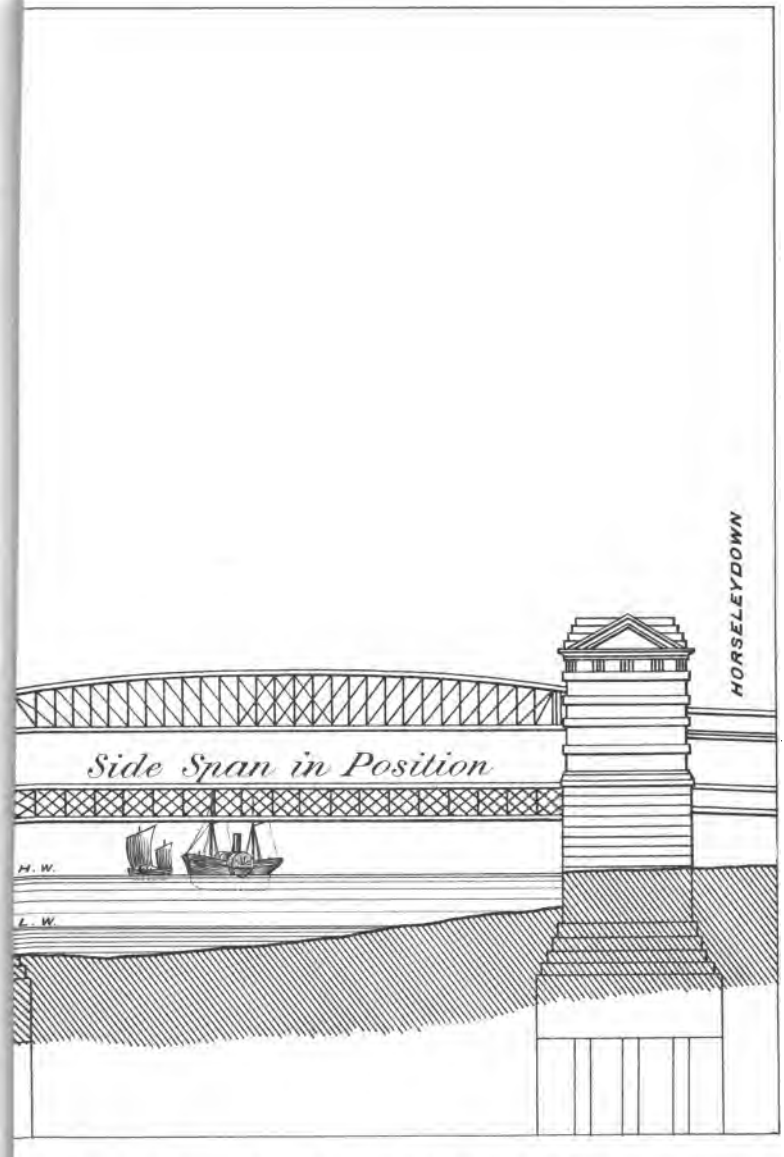
The kind of bridge which would be the most suitable for the traffic of that locality, whether a high-level or low-level bridge, a swing bridge, or a lifting, otherwise called a Bascule bridge, has been the subject of much discussion. Personally the Author would favour the idea of a *high and low-level bridge combined* in one structure, for the following reasons :—Neither the high-level nor the low-level of itself would meet the public needs. Accommodation must be provided for the shipping immediately below London Bridge; a low-level bridge, therefore, without an opening for shipping would not do. A low-level bridge with an opening will necessitate the frequent stoppage of traffic, and the traffic on the north side will have to descend to the approach. A new bridge at the Tower is certain to be the precursor of considerable improvements in the vicinity. The kind of bridge, therefore, that would be of the greatest utility should be selected, and it is hoped the best of engineering skill will be brought to bear upon the question.

The design thus far approved by the Corporation is a Bascule bridge, designed by the City Architect, the centre span of which—200 feet wide—will be lifted in two halves, each of which will be suspended by means of chains and balance weights when closed, and, when required to be opened, will be lifted, as it were, on hinges, each half

standing upright against the side towers, up which towers the pedestrians would have to ascend, 100 feet high, to cross over the centre opening at the higher level, *i.e.*, in case they should be in a hurry to get across, instead of waiting for the opening to be closed. One cannot help thinking, however, that the saving of time would not be very great, to say nothing of the task of ascending 100 feet to descend again on the other side, and so to proceed on the journey of crossing the bridge, whilst the terrible inconvenience and crush of the traffic waiting, possibly for an hour or so at a time, during which the bridge would be open for shipping is a matter of the most serious importance.

It will be remembered that there is a steep descent both at Great Tower Hill and Little Tower Hill, the level at the top of each being 43 feet and 40 feet 5 inches respectively above high-water mark. The height of a low-level bridge should be not less than 40 feet—(London Bridge is 47 ft.; Southwark, 46 ft.; Blackfriars, 37 ft.; and Waterloo, 50 ft.) above high-water mark. It will be seen that a very slight extra incline in the approach would give an extra 30 feet rise,—the height of the upper level of a combined bridge, which could take the traffic of the higher level, whilst the lower level could be made an outlet from Lower Thames Street by a slight incline to the bridge approach.

The object in favouring a combined high and low level bridge is to avoid the repeated stoppages of vehicular traffic on the bridge when the centre span is open for shipping, which must always be a source of great annoyance and inconvenience. With a combination bridge the traffic on the higher level, always considerably more than that on the lower, would never be interfered with, shipping or no shipping, whilst the low-level could be lifted vertically by hydraulic means to the underneath side of the high-level,




, TOWER. H.H.BRIDGMAN. F.R.I.B.A., ARCHT

leaving a clear way for the shipping purposes, and the traffic interfered with would not be nearly so great as that passing continuously overhead. The pedestrian traffic could pass from the lower to the higher level by staircases, or lifts, and proceed on the journey unimpeded when the lower bridge is open. The design the Author considers the most suitable for the purpose is illustrated herewith.

## Cost of City Bridges.

The Corporation, it has been pointed out, will erect the proposed new bridge at the Tower, and construct the approaches. The bridge alone is estimated to cost £750,000. The approaches will cost at least another £500,000, none of which will be included in any figures which will be given as an estimate of the probable cost of carrying out the improvements comprised in this Scheme, as it will not have to be defrayed by the ratepayers. The bridges already erected within and by the City have cost as follows:—

| Date. | Name. | Bridge. | Approaches. | Freeing. | Total. |
|---|---|---|---|---|---|
| 1832 | London Bridge. | £483,732 * | £1,021,421 | £30,000 | £1,535,153† |
| | Blackfriars:— | | | | |
| 1760 | 1st Bridge . . | 230,000 | — | — | 230,000 |
| 1863 | 2nd Bridge . | 396,131 | — | — | 396,131 |
| ‡1864 | Southwark . | — | — | 218,868 | 218,868 |
| | City Cash expended on the three City Bridges . . . | | | | £2,380,021 |

## Cost of Suggested Improvements.

It ought not to be said that London cannot find the means of carrying out such improvements as are called for by the actual wants of the Metropolis. When its wealth is

* Exclusive of Treasury Contribution of £500,000.

† Exclusive of removing old London Bridge—total cost to City, £1,767,153.

‡ Southwark Bridge was first opened free in 1864.

compared with that of the provincial towns of the United Kingdom, as represented by a comparative rateable value, such a plea is groundless. Tables are annexed of the several boroughs of the Metropolis, and of 17 of the largest provincial cities and towns of England, showing the net profits charged on income duty in each under Schedule D for 1879-80. By this it will be seen that the Metropolis is assessed under Schedule D at more than twice the amount of them all, indeed, with an excess of four millions to spare, whilst the City alone is equal to more than the whole of the 17 largest towns taken together.

TABLE of the 17 largest incorporated cities and towns of England and Wales, showing their population, the rateable values, and the net profits charged to Income duty in each case, under commercial Schedule D, for the year 1879-1880 (exclusive of dividends on public stocks and funds), as compared with the City of London and the Metropolis.

| No. | Population, 1881. | Name. | Borough Rate in the £. | | Rateable Value '79 & '80. | Profits charged under Schedule D. |
|---|---|---|---|---|---|---|
| | | | s. | d. | | |
| 1. | 552,455 | Liverpool. . . | 3 | 10½ | £3,211,344 | £9,980,976 |
| 2. | 341,508 | Manchester . . | 3 | 5½ | 2,296,537 | 8,832,192 |
| 3. | 400,757 | Birmingham . . | 3 | 6½ | 1,454,329 | 3,421,056 |
| 4. | 309,126 | Leeds . . . | 4 | 2½ | 1,102,691 | 2,127,168 |
| 5. | 206,503 | Bristol . . . | 5 | 7 | 865,623 | 1,648,656 |
| 6. | 284,410 | Sheffield . . . | 2 | 11 | 914,544 | 1,927,056 |
| 7. | 145,228 | Newcastle-on-Tyne . | 3 | 4½ | 724,281 | 1,648,080 |
| 8. | 180,459 | Bradford . . . | 3 | 10½ | 885,477 | 1,719,792 |
| 9. | 154,250 | Hull, Kingston-upon | 5 | 3 | 578,218 | 1,016,640 |
| 10. | 111,631 | Nottingham . . | 5 | 0 | 696,007 | 951,312 |
| 11. | 152,547 | Stoke-upon-Trent . | 4 | 8 | 59,632 | 897,648 |
| 12. | 128,407 | Brighton . . . | 4 | 3 | 593,671 | 895,776 |
| 13. | 164,303 | Wolverhampton . | 6 | 6 | 237,415 | 763,344 |
| 14. | 176,233 | Salford . . . | 3 | 5 | 795,406 | 728,256 |
| 15. | 124,960 | Sunderland . . | 3 | 8 | 395,300 | 700,000 |
| 16. | 152,511 | Oldham . . . | 3 | 4 | 474,096 | 683,040 |
| 17. | 122,351 | Leicester . . . | 3 | 8¼ | 383,000 | 681,600 |
| | | | | | 15,667,571 | £38,622,672 |

So far as territorial area is concerned, Leeds is the largest provincial town in Great Britain, covering 33¾ square miles. Sheffield follows with 30¾; and then come Birmingham with 13¾; Manchester and Bradford, 10; Newcastle-on-Tyne, 8¼; Liverpool, Glasgow, and Salford, 8; and Edinburgh, 6½. London, as represented by the Metropolitan Board of Works, covers an area of 118 square miles, whilst the Police authority extends over 610 square miles.

TABLE showing the Parliamentary Divisions of the Metropolis, with rateable value and Income Tax returns.

| No. | Population. | Parliamentary Divison of the Metropolis. | Rateable Value 1881. | Profits charged under Schedule D. |
|---|---|---|---|---|
| 1. | 261,061 | City of London | 3,535,494 | £39,263,424 |
| 2. | 498,311 | Marylebone | 23,869,994 | 11,744,016 |
| 3. | 228,932 | Westminster | | 9,476,160 |
| 4. | 524,480 | Finsbury | | 6,979,056 |
| 5. | 221,866 | Southwark | | 4,543,776 |
| 6. | 498,967 | Lambeth | | 2,896,512 |
| 7. | 438,910 | Tower Hamlets | | 2,563,152 |
| 8. | 366,516 | Chelsea | | 1,509,792 |
| 9. | 417,191 | Hackney | | 1,370,688 |
| 10. | 206,651 | Greenwich | | 741,792 |
| | | | * £27,405,488 | |
| | | | Total | £81,088,368 |

The Tables above are taken from authentic sources. No better evidence of the wealth of London in comparison with the principal cities and towns of England can be adduced. Many of the several towns named have carried out important improvements, they possess their own water and gas works, and markets, having invested very considerable sums for that purpose for the benefit of the ratepayers, on the security of the rates. The liabilities of

* Estimated for 1885 to be £28,901,041.

some of these towns are very high when compared with those of the Metropolis.

The Metropolitan Improvement Rate is levied on the whole of London by the Metropolitan Board of Works, and collected through the various Vestries and District Boards. Fortunately for London it has a rich Corporation, which is in the habit of acting somewhat liberally with its private funds in promoting and carrying out extensive metropolitan improvements; but for this fact the metropolitan ratepayers would be much more heavily taxed. For the most part, however, the various metropolitan improvements are under the control of the Metroplitan Board of Works, which was constituted in 1855 in the place of the numerous Paving, Trusts, and Improvement Commissioners then existing. The rate commenced in 1856 at 2*d.* in the £, and now averages 6½*d.* The proportion of the Metropolitan Board of Works consolidated rate compared with the total average rate of the metropolis, as explained by the following half-yearly demand note issued by the St. Pancras Vestry, considering what it represents, is by no means excessive. This is about the average rate throughout the various Parishes and Districts of London, but the rate varies in the several Districts. This inequality will doubtless soon be adjusted. It is manifestly unfair that the poorer Districts should have to pay the total cost of local improvements, as is now the case, when they are in many instances of metropolitan importance.

## STATEMENT FOR RATE FOR THE HALF-YEAR ENDING LADY DAY, 1884.

*Poor Rate, 14d. in the £.*

| | Approximate Amounts in the £. | | |
|---|---|---|---|
| | | s. | d. |
| * Rate for the Relief of the Poor. | 10*d.* | 1 | 2 |
| * County Rate . . . . | 1*d.* | | |
| * Metropolitan Police Rate . | 2¾*d.* | | |
| Rate for preparing Borough and County Lists of Voters, Jury List, and for General Expenses of Directors and Overseers . . . . . | ¼*d.* | | |

*Lighting Rate, 1d. in the £.*

| | | | |
|---|---|---|---|
| Rate for the Expenses of Maintaining and Lighting the Public Street Lamps . . | 1*d.* | 1 | |

* *Metropolitan Board of Works Rate, 3d. in the £. Consolidated Rate.*

| | | | |
|---|---|---|---|
| Main Drainage . . . . | ½*d.* | | |
| Fire Brigade . . . . | ½*d.* | | |
| Rate for freeing the Bridges over the Thames from Toll . | ½*d.* | | |
| General Expenses of the Board | 1½*d.* | | 3½ |
| *Sewers Rate, ½d. in the £.* | | | |
| Rate for the Repair and Construction of Sewers . . | ½*d.* | | |

Carried forward 1*s.* 6½*d.*

| | | |
|---|---|---|
| Brought forward | | 1*s.* 6½*d.* |
| *General Rate, 9d. in the £.* | | |
| Rate for Paving, Watering, and Cleansing Streets, Removal of Refuse, &c. . . . | 4½*d.* | |
| * Rate for the School Board for London . . . . | 3½*d.* | |
| Rate for the General Expenses of the Vestry, *i.e.*, Salaries, Sanitary Expenses, Law and Parliamentary Costs, Printing and Stationery, Public Gardens, &c. . . . | 1*d* | 9½ |
| For payment of Interest on the Bond Debts of extinct Paving Trusts . . . . . | ½*d.* | |
| Total for the half year . | | 2 4 |

The above is the usual form of most of the local tax papers. It sets out the proportions of the rate collected, and how the rate is disbursed.

The Vestries have no control over the sums marked with an asterisk, which are collected and paid over by them to the various authorities on their several precepts. In St. Pancras, for instance, these several amounts during the first half of this year were as follows:—

| | |
|---|---|
| * Rate for the Relief of the Poor . . | £59,000 |
| * „ Police . . . . | 15,907 |
| * „ County . . . . | 6,200 |
| * „ Metropolitan Board . | 19,354 |
| * „ School Board . . | 21,030 |
| Total over which the Vestry have no control | £121,491 |

In 1881 this one parish had a population of 236,209, or

about one-fifteenth of the metropolis. It had 24,701 inhabited houses and 23,690 householders. Its rateable value was £1,470,627.

The average annual rate in London from 1876 to 1882 was 5*s.* $0\frac{2}{10}$*d.* in the £. This included $6\frac{2}{10}$*d.* Metropolitan Board of Works Rate, and and $5\frac{9}{10}$*d.* School Board Rate.

The increase of the rateable value of the Metropolis is advancing by rapid strides, the increase of the rateable value of the City and Liberties alone is as follows:—

| | |
|---|---|
| 1801 . . . . . | 507,372 |
| 1831 . . . . . | 792,904 |
| 1861 . . . . . | 1,279,887 |
| 1871 . . . . . | 2,186,487 |
| 1881 * . . . . . | 3,535,494 |

In 1811 the City possessed 17,413 inhabited houses at an average rental of £32 9*s.* per annum. In 1861 the number of houses had decreased to 13,431; but the rental in 1811 of £565,243 had increased to £2,109,935 per annum. A less number of buildings, but much larger, have been erected in the place of those removed. To capitalize the rental of 1811 at 4 per cent. would have produced a sum of £14,131,075, whilst to capitalize the rent of 1861 at the same rate would have produced £52,781,375, and in 1881 £98,993,832.

To confirm the fiscal pre-eminence of London it may be mentioned that the Customs duties paid in London in 1864 exceeded by £484,611 those paid in all the other ports of the United Kingdom, and had paid on an average of the nine years then past £331,149 more, yearly.

In order to ascertain the fiscal power of the Metropolis to carry out improvements, Tables are annexed showing the increase of the rateable value of the Metropolis, and the of its liabilities at the present time, and the cost to the ratepayers per annum for what they already possess in the shape

* A sevenfold increase within 80 years.

powers of the Metropolitan Board of Works, the extent of improvements, together with an approximate estimation of the cost of the improvements suggested in this essay.

RATING OF METROPOLIS BY THE METROPOLITAN BOARD OF WORKS DURING ITS EXISTENCE.

| Year. | Rateable Annual Value, as defined by Metropolis Management Act of 1855, after allowing exemptions. | Approximate current Expenditure defrayed by Rate. | Rate in Pound levied by Board. |
|---|---|---|---|
| | £ | £ | d. |
| 1856 | 11,283,663 | — | 2·09 |
| 1857 | 11,290,869 | — | 1·86 |
| 1858 | 12,031,151 | — | 2·13 |
| 1859 | 12,045,476 | — | 4.30 |
| 1860 | 12,057,455 | — | 5·38 |
| 1861 | 12,450,416 | — | 5·32 |
| 1862 | 12,514,053 | — | 5·20 |
| 1863 | 12,569,969 | — | 5·53 |
| 1864 | 12,588,661 | — | 6·12 |
| 1865 | 14,419,823 | — | 5·22 |
| 1866 | 14,524,542 | — | 6·32 |
| 1867 | 15,261,999 | — | 6·99 |
| 1868 | 16,196,547 | 442,292 | 6·09 |
| 1869 | 16,257,643 | 427,399 | 6·04 |
| 1870 | 18,719,237 | 288,196 | 5·10 |
| 1871 | 18,683,288 | 285,431 | 3·31 |
| 1872 | 19,971,281 | 291,091 | 2·68 |
| 1873 | 20,287,709 | 290,932 | 2·74 |
| 1874 | 20,549,011 | 364,335 | 4·42 |
| 1875 | 20,886,946 | 466,228 | 5·26 |
| 1876 | 23,111,313 | 446,595 | 4·60 |
| 1877 | 23,136,819 | 464,210 | 4·82 |
| 1878 | 23,469,970 | 476,562 | 4·88 |
| 1879 | 23,960,109 | 572,555 | 5·82 |
| 1880 | 24,501,410 | 636,366 | 6·32 |
| 1881 | 27,405,488 | 669,306 | 5·89 |
| 1882 | 27,386,086 | 716,519 | 6·24 |
| 1883 | 27,883,078 | 735,470 | 6·23 |
| 1884 | 28,415,764 (Estimated.) | 772,410 | 6·50 (Estimated.) |
| 1885 | 28,911,041 | 722,776 | 6·50 |

| | | | |
|---|---|---|---|
| The Metropolitan Board of Works since its existence has incurred a total liability for various Improvements and Loans to Local Authorities to the extent of . . | £31,681,294 | 4 | 6 |
| Of this has been paid off . . . | 9,363,139 | 11 | 8 |
| Reducing the liability to . . . | 22,318,154 | 12 | 10 |
| After allowing for Assets of Advances made, value of property to the extent of . . . . . | 7,954,812 | 17 | 3 |
| | 14,363,341 | 15 | 7 |
| A further liability to redeem Stock of Leases, a net liability to 31st December, 1883, of . . . | 470,330 | 7 | 11 |
| Net Liability of the Board . | £14,833,672 | 3 | 6 |

| | |
|---|---|
| The total charge for interest and redemption of the Board's capital per annum is . | £1,138,980 |
| Towards which the Coal and Wine duties,* the interest receivable from Local Authorities, and the rents of lands and premises on the various lines of Improvements, not yet disposed of, amount to . . . | 588,474 |
| Net charge of Debt on Rates . . . . (equivalent to a charge on the Rates of 4·57*d.* in the pound.) | £550,506 |
| *The net charge of Debt on Rates in* 1883 *was* . *or* 4·60*d. in the pound.* | £535,185 |

* The Coal, Corn, and Wine duties levied by the Corporation, amount to 1*s.* 1*d.* in the £, of which 9*d.* is appropriated by the Metropolitan Board of Works, and from which revenue the Thames Embankments have been chiefly constructed, whilst the other 4*d.* is

For every £1,000,000 by which the debt is increased, the additional charge on the rates is 0·42*d.* in the pound, unless counterbalanced by an increase of the rateable annual value.

The estimated rate to cover both interest and repayments of the Board's liability is 6·50*d.* Considering the magnitude of the operations of the Board, and the important improvements already effected, this rate cannot be deemed extravagant.

As to London being able, with so high a rateable value, to carry out a bold and comprehensive scheme, such as the foregoing, approximately estimated to cost £10,000,000, there is no question. The annual cost of the same would incur an addition to the present rate of not more than about 4¼*d.* in the £ for a period of 30 years.

Fourpence farthing in the £ on the estimated rateable value for 1885 will produce £511,966, which would be the amount required to pay interest and annual redemption on the £10,000,000 capital if borrowed at 3 per cent. per annum, the usual borrowing rate of interest at which the Metropolitan Board of Works have obtained their requirements since 1880.

This Estimate—which is apart from the construction of the New Bridge and approaches thereto, the whole cost of which will, in all probability, be borne by the Corporation—is based on the annual rateable value for 1885, of £28,911,041, and on the expectation of a large proportional recoupment, and consequent increase in the assessment value. The longer every improvement is delayed the greater will be the cost. The many advantages to the metropolis, of such an improved condition of its thoroughfares, would amply compensate for the, comparatively speaking, slight addition to the present taxation.

expended by the Corporation, and is in part represented by the Holborn Viaduct Improvement, the cost of which is gradually being paid for from the same source.

## SUBWAY CROSSINGS.

At all important centres, such as the Mansion House and Bank intersection, King William Street by the statue, Gracechurch Street by Lombard Street and Fenchurch Street; Gracechurch Street by Cornhill and Leadenhall Street; Mansion House Station; Cheapside by St. Paul's and the Post Office; Ludgate Circus; Waterloo Place; Strand; and at other important centres and intersections of streets, attractive subway crossings should be provided to enable pedestrians to cross from side to side more easily, which would at the same time materially expedite and facilitate the traffic, and so prevent the present difficulty and extreme danger, at times, of crossing. The subways should be faced internally with white glazed bricks and lighted from the sky overhead where practicable, and lighted artificially with gas or electricity. At the Mansion House and Bank there should be in the centre of the intersection opposite Princes Street a circular chamber 20-ft. in diameter, with a 10-ft. circular light from the street overhead, around which light, at the top, extending to the 20-ft. circle, should be rests or refuges protected by kerb and posts for persons crossing at the street level. Below, from this centre, should radiate several corridors to the corners of the various streets, say to the Wellington Statue in front of the Exchange; to the Bank corner; also to the Union Bank corner; to the Mansion House and to Cornhill by Lombard Street, and it may be desirable to have one to Mappin and Webb's corner, and thence across to the Safe Deposit to take the traffic from Walbrook and that side of Queen Victoria Street. At all these points there should be steps, communicating, by corridors, to the central chamber in straight lines so as to admit of the same all being easily controlled from the centre, and against the walls there

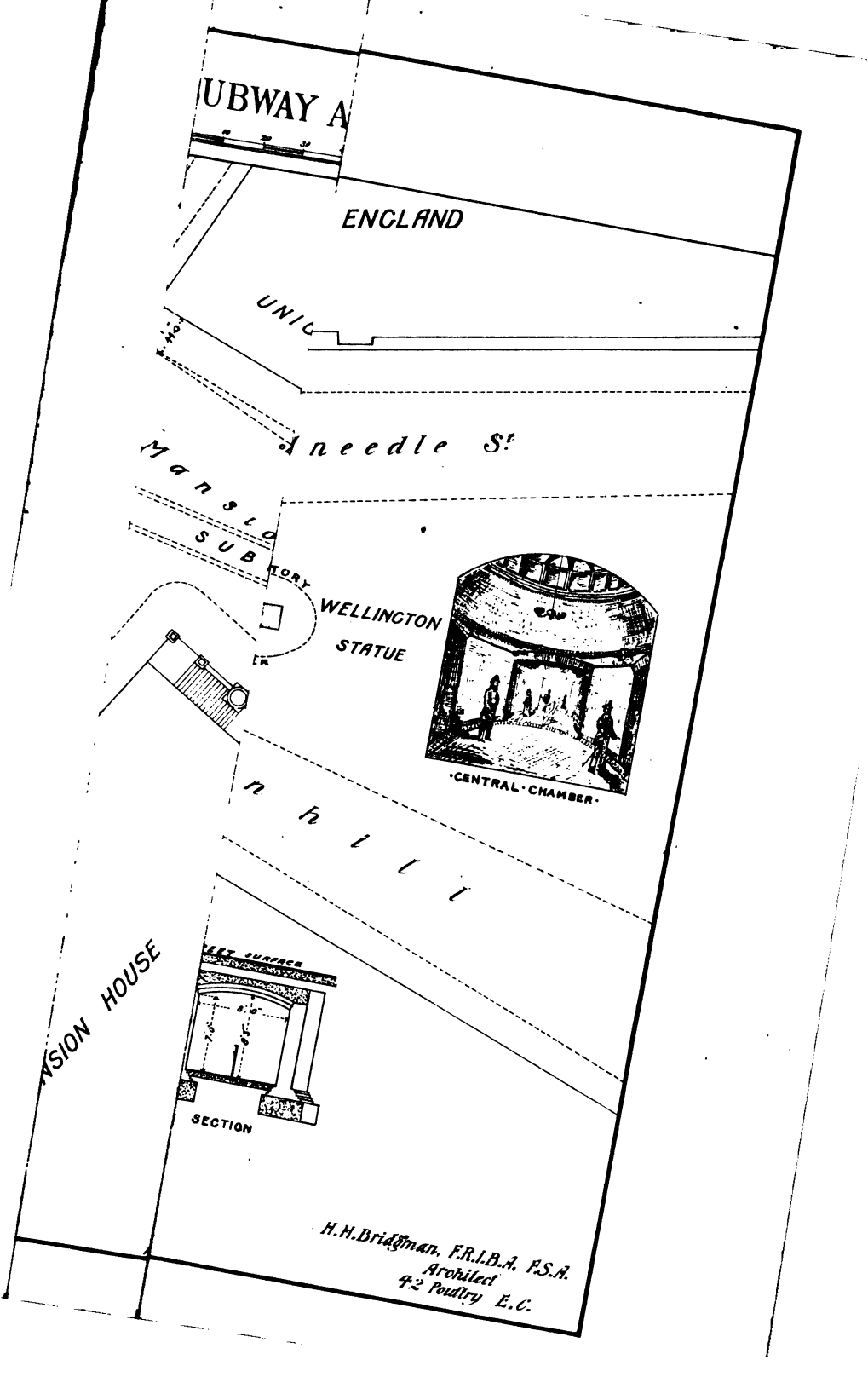
should be affixed a tablet indicating where each corridor led to. A pendent light (electric if possible) in the central chamber and gas brackets against the walls, with strong reflectors at the ends, would give ample light to the same. There is no practicable difficulty in the way of the staircases, as these could be obtained within the line of kerb, as shewn by the plan, if the footways were gradually widened at the several corners sufficiently to admit the same without reducing the ordinary width of footway. (See illustration.)

## Telegraph Subways.

In the formation of new streets spacious subways should in all cases be made for the reception not only of all main sewers and gas and water pipes, but special provision should be made for all electric apparatus, telegraph and telephone wires, pneumatic tubes, hydraulic power, &c. If all of the foregoing were provided for in this way the great difficulty attending these matters at the present time would be considerably lessened, and by degrees the whole of the present overhead system of wires could be changed into a subterranean one, thus avoiding the very great inconvenience, not to say danger, of the present unsatisfactory and dangerous arrangement.

## Thames Navigation.

It is a surprising fact that the River Thames is not utilized, in a far greater degree than it now is, for locomotion from one part of London to another, not only for persons moving about London—in much finer steamboats than those now in use on the river—but for general trading, on specially made steam-barges, either up or down or across the river. One ventures to think, if this subject were to receive the attention it deserves, with adequate respect-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ASION HOUSE
SURFACE
SECTION
H.H.Bridgman, F.R.I.B.A. F.S.A.
Architect
42 Poultry E.C.

able steamboats and barges, with the necessary approaches formed from the river, a very large and profitable enterprise might be carried on in so large and rapidly increasing a city as London, where upwards of 80,000 are added, annually, to the number of its inhabitants.

## GATES AND BARS.

The various gates and bars shutting off direct communication between one part of the Metropolis and the other—necessitating circuitous routes in consequence, incurring both expense and delay, and sometimes great annoyance—should be abolished, so that the full right to every street in the metropolis might be exercised by the ratepayers, by whom the cost is paid of maintaining, cleansing, and lighting the same. The numerous streets and squares where these gates and bars are now located should be thrown open to the public. It is manifestly unfair that the present state of things should be allowed to continue.

## WAREHOUSING.

It would be a decided improvement if, in all cases, warehouses were prevented from unloading heavy goods with cranes which would interfere with pedestrian traffic after a certain hour in the morning, say nine o'clock, unless provision were made whereby all such goods so unloaded after that hour might be lifted direct to the first-floor level, and then lowered to the basement, inside, if so required. In such cases a screen or shield of hard wood or metal might be provided overhead, projecting from the front sufficiently high to protect passers by on the footpath. These shields might run out horizontally on rollers from the first-floor level, and could be supported on the kerb by small portable iron

posts. The present system not only materially inconveniences the footway traffic but is highly dangerous. All day in some thoroughfares huge packages, &c., are dangling overhead, whilst passers by are continually falling over insufficiently-guarded open-pavement traps, or into the areas whilst unloading is going on. It is, however, a difficult matter to deal with, particularly as the custom has so long prevailed of entirely monopolizing the footway, just when an inclination is felt to do so, to the great annoyance and inconvenience of pedestrians.

## SANITATION.

There is not one of the foregoing improvements named, which, if carried out, would not be accompanied by great sanitary gain, not merely from the advantage of providing more breathing space and ventilation to London generally, but by opening up and improving some localities which are now a discredit to the Metropolis, more particularly in the cases of Seven Dials; Clare Market; Fetter Lane; Clerkenwell; and Middlesex Street; Whitechapel; also in Bermondsey and Blackfriars. In all metropolitan improvements the question of health should be an element of paramount consideration.

## SUBSOIL.

Where the new or improved lines of streets pass through churchyards or old burial grounds, the subsoil should not be disturbed, but a surface layer two feet thick of Portland cement concrete should be laid over the entire area. Where, however, the sewers or subways pass through the same, the subsoil of the subways should be removed, and concrete walls and floors of concrete, as before described, should be formed to the required depth, as a lining to the same two feet thick in all cases, the walls to reach up to the surface;

by this means no part of such burial ground would have a less thickness of concrete over and around the entire area of the ground interfered with, than two feet.

## New Sewers and Drainage.

The fact that there would be new and spacious sewers constructed under every new line of street, advantage would, no doubt, be taken to connect all existing contiguous sewers and drains to them, thus providing a ready means of rapidly discharging and carrying away of all house and surface drainage, in the place of the present lengthy, tortuous, small, inefficient, and sluggish drains which have to do very important service, and for which they are in no wise fitted. Every house, too, should have an effectual mode of drain ventilation, *i.e.*, of preventing the sewer gas entering within the buildings, and the drainage system of every separate house would be provided with a free circulation of fresh air throughout.

## Sewer Ventilation.

In carrying out any important improvement, means should be taken to efficiently ventilate the sewers, by erecting at certain points on the surplus ground, to be retained or obtained for the purpose, tall chimneys, with strong furnace blasts, and tall chimney stacks adapted to draw off the deleterious gases escaping from the sewers, in place of the present very objectionable system of street ventilators. These are now so placed as to be immediately under people's noses as they pass along the streets, and *the impure air* in ascending cannot fail to enter the windows and vitiate the atmosphere of rooms to a large extent—a most unsatisfactory and unwholesome system which a few

years hence, when the present rapid progress of science in sanitary matters shall have reached a more advanced stage, will be simply remembered as a relic of barbarism.

## LEVELS AND GRADIENTS

All the new lines of streets have the levels marked on them, very few of them have steep gradients, and those are chiefly of short lengths. It has only been deemed desirable to alter the levels in so far as that may be necessary to obtain the best gradients.

## CONCLUSION.

One can scarcely write an Essay on so important a subject without, at least, referring to Sir CHRISTOPHER WREN and others who have left on record their views of improving London. In regard to Sir CHRISTOPHER WREN'S design for reconstructing the City, it must be said that it could only have been carried out at one particular period in the history of London—viz., at the time he proposed it, after the great Fire of London. A similar opportunity, however, one hopes, will never occur again. The City was rebuilt on much the same lines as previously existed, and any improvements of importance now to be effected—and many a scheme for a single street here and there has been proposed, but no such comprehensive idea as that promulgated by Mr. WESTGARTH —could not be carried out, in Central London, without paying special regard to the present arrangement of streets, particularly in the City portion of Central London. A bold scheme may be, however, contrived without slashing heedlessly through invaluable properties with the simple idea of getting a straight line, or a certain effect. Indeed, straight lines are not so much needed as a series of streets that will materially aid the existing streets, laid out in such manner

as to intersect them and intercept the traffic at important centres. This has been the aim and object of this Essay, and the Author ventures to hope that he may have succeeded after much consideration, in devising a scheme, which, to a very great degree, if carried out, would free London from its present straitness and incubus, in regard to facilities for locomotion, for a very long time to come, and give it an opportunity of moving freely, of expanding to any extent, and of advancing rapidly in prosperity—even by leaps and bounds—if that be a condition of things devoutly to be wished.

What is needed, in the Author's humble opinion in the first place, is an agreement, or an approach to an agreement, by the principal recognized Authorities of the Metropolis, on some general and systematic scheme for the future improvements of London, to be dealt with as a whole or in parts as opportunity occurs. These should be planned on the broadest and most comprehensive scale. Numerous instances could be advanced, where, had such a scheme been laid down, the serious mistakes of allowing important sites to be rebuilt over, which must inevitably, a few years hence, be purchased for Metropolitan improvements at three or four times the present value, would never have occurred. In one case the value had increased five fold in a very brief period. Whether any improved system of Government for the Metropolis would be able, wholly, to remedy the present condition of things is a problem to be solved ; but that some Authority with full powers to deal with such important matters as the future improvements of London, with a fully matured plan to work upon, is urgently needed, is beyond all question.

*December*, 1884.

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